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USSR Report

ENERGY

No. 91

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ELECTRICAL ENERGY DEVELOPMENT IN PAVLODARSKAYA OBLAST DETAILED

Alma-Ata SOTSIALISTIK QAZAQSTAN in Kazakh 13 Dec 81 p 2

[Article by O. Qaliev: "An Area of Brilliant Development"]

[Text] Advances have been made in energy in the Pavlodar region of the Ertis, especially during the last five-year plan. Due to the installation of a number of thermo-electrical stations there, the region has become a very powerful area for the mass generation of electrical energy for the republic and for our nation in a short period of time. Today, due to the region's rapid development, major construction is under way. Since 1965 intensive electrification of the oblast was taken decisively in hand. This made possible the uninterrupted electrification of the oblast with the construction of No 1, 2 and 3 Thermoelectrical Centers at Pavlodar City and later with the startup of the Ermak State Rayon Electrical Station. The total capacity of these facilities reached 3 million kilowatts. More than 20,000 kilometers of transmission lines to remote areas have been strung in the oblast and more than 3,000 transformers installed. Thus, the Pavlodar Regional Electrical System comprises 125,000 km^2. The total utilized electrical energy capacity has reached 1.6 million kilovolt-amperes.

The party and the regime, devoting special attention to Ekibastuz, have, as is well known, sanctioned a special resolution on the construction of four large stations of a total capacity of 16 million kilowatts based on the Ekibastuz and Maykobe mines. Five years have passed since the resolution. During this time the region of Ekibastuz has become one of the major construction areas of the oblast. The "Ekibastuz Energy Construction" Trust, which once had only a score of personnel, has grown into a collective of more than 12,000 and a well-based construction organization.

This region, known as the Ekibastuz Fuel-Energy Complex, has been publicized as an all-union shock Komsomol construction project. And what were once divisions of the "Siberian Electrical Installation" and "Central Asia Energy Installation" Trusts, the first such specialized construction organizations in the USSR, have now been expanded into independent construction administrations. The number of construction organizations of this kind that have come from outside to help has now reached 20.

In addition, the number of large industries supplying the Ekibastuz stations with various equipment and construction materials exceeds 30.

Our nation has allotted R 8 billion for the four electrical stations being built and installed in the Ekibastuz region. This is an investment equivalent to the two Siberian mainlines. When the four Ekibastuz State Rayon Electrical Stations are completed and put to work, they will have a capacity equal to the four Bratsk State Rayon Electrical Stations.

The Ekibastuz-Ortalyq Electrical Station, which generates a 1,500 volt DC current, is devoted to supplying electrical energy to the central rayon of the USSR. There is no comparable project in the world. Transmission lines are more than 2,500 kilometers long. They are installed on towers 32 meters tall on the future LEP-1500 Line. The towers number more than 5,000 in all. The length and current of the United States Pacific Ocean and African Mozambique Electrical Energy Lines are somewhat less.

The Ekibastuz-Ortalyq Energy System is a major construction project of a sort rarely seen in the world. In the future, energy from the Ekibastuz State Rayon Electrical Station will be collected at satellite stations and transferred to the Tombov station via transmission lines. There the electricity will be converted from DC to AC and delivered to consumers. Building the satellite stations will be a complex construction effort. The project will cover a total area of 100 hectares. At present more than 60 Soviet industries are preparing equipment for the Ekibastuz and satellite stations at Tambov. Advanced modern technology will be employed in equipping them.

In October of last year construction began on an experimental long-range transmission section for electrical transmission from Ekibastuz. In Kazakhstan this line is covering a large area, stretching over the territories of Pavlodarskaya, Tselinogradskaya, Turgayskaya and Kustanayskaya Oblasts. Two major control organizations with representatives from nine major trusts are involved in the construction of the transmission lines. At present the first section of the lines, stretching from Ekibastuz to Kokchetavskaya and Kustanayskaya Oblasts have been completed. Subsequently transmission will be extended to Uralskaya Oblast. Electrical energy will be delivered to the Altay and Siberia and to Central Asia through such lines.

At present the first section of No 1 State Rayon Electrical Station has been completed and put into operation. The total capacity of the four blocs now operating has reached 2 million kilowatts. These four blocs alone are equal to the former capacity of the Ermak State Rayon Electrical Station. What is the secret behind the completion of such major work in such a short period of time? This question was answered as follows by E. Filatov, manager of the "Ekibastuz Energy Construction" Trust, the chief control organization:

"The reason that we were able to complete such large scale work in such a short period of time is that the installers remained at Ekibastuz on a stable basis. The advantages and disadvantages of the former on-and-off-again work of specialists have been revealed by practical experience. It is certain that stable labor cadres always mean success."

Active participation in the work by such cadres opens the way for new efforts and new types of decisions in the work. To be sure, all of this has its impact upon our common work. When the last bloc was installed, the brigade headed by A. Stepanov introduced into production the new method of layer installation for the first time in the Soviet Union.

The number of those creatively taking part in the construction of the station is large. Among them are brigades and division collectives headed by B. Apalbaev, A. Kishchenko, S. Shchenduk, A. Mironov, V. Sharov and V. Karpov.

Raising the profitability of 11th Five-Year Plan, production and conservation of fuel, heat and electrical energy have become basic goals for the energy workers of the Pavlodar region. It is clear from the discussion above that many measures are being carried out in connection with this. Today Oblast energy workers have achieved major economic savings. The primary cost of a kilowatt of electricity from oblast electrical stations has been reduced to 54 kopeks. This is 1.7 times cheaper than the average rate for the entire republic. All of this means that expenditures on oblast energy have been successful.

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CSO: 1832/122

PARTY PLENUM ADVANCES NEW GOALS FOR KAZAKH FUEL AND ENERGY INDUSTRY

Alma-Ata SOTSIALISTIK QAZAQSTAN in Kazakh 13 Dec 81 p 2

[Interview with A. O. Arystanov, first deputy minister of power and electrification KaSSR, date and place not specified: "An Area of Development"]

> [Text] The November (1981) Plenum of the CC CPSU discussed the question of the proper development of the fuel-energy complex, a major task involving the entire people's economy, and specific directions for current tasks of energy workers in 1982. In connection with this we print below our reporter's conversation with KaSSR First Deputy Minister of Power and Electrification Atabek Omaruly Arystanov on measures to fulfill these tasks in the KaSSR.

[Question] Comrade L. I. Brezhnev, first secretary of the CC CPSU and chairman of the USSR Council of Ministers pointed out at this year's November Plenum of the CC CPSU that we cannot slacken our efforts in developing the Soviet fuel-energy complex. What is being done in this area today in the KaSSR?

[Answer] It is well known that energy development is advancing at a brisk pace in Kazakhstan today. For example, the general capacity of the Ekibastuz Fuel-Energy Complex, the largest in the world, has reached 20 million kilowatt hours. The Shul'ba Hydroelectrical Station is also under construction. Tens of other energy projects are being put into operation alongside them.

However, the development of the fuel-energy sector becomes more complicated as time goes on, increasing primary costs. Thus one of the major goals now before energy workers is ensuring that amounts of energy produced grow more rapidly than expenditures to produce energy.

A coordinated program for conserving thermo-energy resources was prepared for the 11th Five-Year Plan. The program involves installing new energy capacities and renovating and reconstructing energy equipment. This will have a major impact upon energy conservation. Likewise, scientific and technical research to properly exploit fuel and electrical energy will yield major results. Maintaining work discipline and economy of labor and carrying out repairs quickly will greatly affect savings. Already such measures have saved a million tons of contracted fuel and hundreds of thousands of kilowatt hours of electrical energy during the current five-year plan.

[Question] How can we reduce expenditures of electrical energy and fuel utilized for specific purposes?

[Answer] To be sure, all economic laws are being strictly observed in this area. Knowing the correlation between conservation and waste at the present developmental level of production influences the search for ways to use energy properly. Today a major goal everywhere is saving one gram of fuel for each kilowatt hour generated. And what will be the savings? A savings of one gram of fuel in generating one kilowatt hour will result in saving 90,000 tons of contracted fuel in the republic in 1985.

Since special equipment for regulating and monitoring hot water and energy was not installed the same everywhere, the struggle against waste in the domestic and communal services sector has not been able to gain much ground. Likewise, obligations regarding heat and electrical energy conservation have not been fulfilled in some industries. The fact that things were not done properly in the Dzhezkazgan Mining, Oskemen Lead-Zinc and Zyryan Lead Combines and in factories and combines at Chimkent, Karaganda and Pavlodar is causing difficulty. The enormous benefits of conservation are clear to all. The immediate bringing of piping up to levels and a unified exploitation of existing reserves will make possible a yearly savings of 168.5 million kilowatt hours of electrical energy and 170,000 gigacalories of heat in the non-ferrous metals sector.

There are many methods of economizing. One is the forceful spread of socialist competition. There is no doubt that fuel, electrical energy and materials savings have rapidly increased in industries where socialist competition was well organized. Today numerous brigades and leading production workers in the sector set good examples for other collectives. Because many leading collectives, such as the Electrical Installation Brigade of the Chimkent Mechanized Train headed by Nasyrkhan Rakhmatullaev and the Electricians Brigade headed by Aleksandr Fugizhi of the Ermak Electrical System Industry, have guaranteed high labor achievements this year, they have been awarded the title "Leading Brigade of the KaSSR Ministry of Power and Electrification." Likewise, Vitaliy Litvinenko, senior machinist of the Kustanay Thermo-Electrical Center, Boris Kirpichnyy, senior machinist of the Guryev Thermo-Electrical Center, Aleksandry Zhivlyk, senior turbine machinist of the Karaganda No 2 State Rayon Electrical Station, Petry Gorin, electro-fitter of the Dzhambul State Rayon Electrical Station and Viktor Makhov, turbine section fitter of the "Central Kazakhstan Energy Repair" Production Industry, have gained the title "Leading Worker."

This year the Karaganda Thermo-electrical Center, the "Kazakhstan Electrical Agricultural System" Trust's Alma-Ata Mechanized Train and the "Guryev Energy" Rayon Administration are ahead of other industry collectives.

[Question] What are the questions and problems that await solution in the development of the republic's energy?

[Answer] In terms of major problems the Ekibastuz Complex comes to mind first. Not a little is being taken in hand there now in terms of exploitation of coal strata, the four very large rayon electrical stations now under construction, the construction of the industrial base and the construction of repair factories and a residential city for energy workers. For example, at No 1 State Rayon Electrical Station where three energy blocs are producing and a fourth is being prepared for installation, units are still not operating on a regular basis. The work of station equipment is poor due to poor quality manufacture in the factories. Likewise, inadequacies have been brought to light in the work of construction and workers at Ekibastuz. Various equipment and workers are in short supply for construction projects.

Although electrical stations at Dzhezkazgan, Karaganda, Pavlodar, Kzyl-Orda and Ermak consume very large amounts of coal, they produce low amounts of electricity. There the main problem is delays in replacing obsolete equipment. Also, in Mangyshlakskaya Oblast the supply of electrical energy occurs under difficult conditions. Plans for the development of energy sources in the oblast have not been coordinated with the rate of development of the oil and gas industry. For this reason I think that if republic planning organizations, working together with oblast party and soviet organizations, devote effort to the installation of the No 3 Energy Bloc of the No 3 Thermo-Electrical Center in Shevchenko City, it will become possible to eliminate holes in planning.

[Question] There must be many things that must be done by the republic's energy industry in the coming year. We know that there was a thorough discussion of the matter at the Fourth Plenum of the CC Kazakhstan CP and at the Fourth Session of the 10th Election of the KaSSR Supreme Soviet. In brief, what accomplishments are energy workers prepared to achieve in 1982?

[Answer] Next year 67.8 billion kilowatt hours of electrical energy and 50 million gigacalories of heat will be produced in the republic. The value of the transmitted product will reach R 1327.3 million. The industrial work profits will be R 178.23 million, and R 414.7 million of financing will be used.

At the recent November Plenum of the CC CPSU, Comrade L. I. Brezhnev advanced a goal of overfulfillment of obligations for fuel and energy production. This is because the needs of our nation are growing rapidly. Thus a considerable increase in energy and fuel production is foreseen in the plan for 1982. However, to fulfill and overfulfill the plans, all resources and incentives available must be fully exploited.

In order to fulfill the party's goals properly, the republic's energy workers must eliminate lagging and devote all their efforts to fulfilling the obligations for 1982 and the tasks that they have taken upon themselves. Thus, we greet the 60th Anniversary of the USSR and the 250th Anniversary of the Voluntary Unification of Kazakhstan to Russia with suitable accomplishments.

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NEW WAY FOR FIGURING SPECIFIC CAPITAL INVESTMENT IN FUEL INDUSTRY DESCRIBED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 10, 1981 pp 42-53

[Article by V. Filanovskiy, USSR Gosplan section chief, and V. Bugrov, doctor of sciences and professor: "Improvement of Standard Practices for Determining Specific Capital Investment in the Fuel Extracting Industry"]

[Text] By way of discussion.

Solution of the tasks of raising capital investment effectiveness that the 26th CPSU Congress set forth for the fuel-extracting branches of industry, which, as L. I. Brezhnev noted, "already today get the lion's share of investment...,"[1] is of exceptionally great importance. The fuel-extracting industries' share in total capital investment in industry was 30.8 percent in 1961-1965, 31.4 percent in 1966-1970, 30.3 in 1971-1975 and 32.1 in 1976-1980.

In the future, because of the emergence of a number of negative tendencies (deterioration of mine-geology conditions, the redeployment of fuel extraction to the northern, northeastern and eastern regions of the country, a rise in the share of capital investment that is aimed at maintaining the fuel-extraction level already achieved, and a number of other factors that ensue from specific peculiarities of the extracting branches of industry), a further rise in the share of capital investment in fuel extraction is to be expected. This foreordains a need to improve standard practices for assessing the economic effectiveness of capital investment, since only on such a basis can the correct redistribution of investment among various branches of the fuel and power complex be insured, optimization of the fuel and power balance be achieved, and a correct assessment be made of the effectiveness of savings and the rational use of fuel and power resources and the economic desirability of bringing local sources of fuel and energy (peat, shale, minor coal fields, bituminous sandstones, and so on) and new and renewable sources of energy (the sun, wind, geothermal energy, and so on) into the national-economic turnover.

The discussion about standard practices for computing the comparative economic effectiveness of capital investment in the recovery of various types of fuel and, in particular, about standard practices for computing specific capital investment, developed especially widely in the 1960's.

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[1] Materialy XXVI s"yezda KPSS [Papers of the 26th CPSU Congress], Moscow, Politizdat, 1981, p 41.

A majority of the sources have concluded that the economic benefit of capital investment in developing the production of oil and gas is high in comparison with coal. And other opinions were expressed along with these. Thus, Z. Chukhanov noted that "the difference between the cost of natural gas and coal never had been 20-fold to 30-fold, and the labor expenditures for these types of fuel were, in actuality, $1\frac{1}{2}$-fold to 2-fold. As for the costs of oil and coal, they are quite close to each other...."[2] Such contradictory points of view were the result of differences in methodological approach--Z. Chukhanov, for instance, considering that "the actual social cost (the complete expenditures for social labor) are the ordinary prime costs of output (the ordinary production outlays) to which are added a portion of specific capital investment."[3]

There is no common approach to the comparative effectiveness of capital investment in extracting the various types of fuel and power resources at present. A lack of unity of views is observed mainly in the procedures for computing specific capital investment and the coefficient of effectiveness of capital expenditures and in accounting for the time factor. The more so since different standard practices for computing specific capital investment in the extraction of oil, gas and coal are used in practice. The result of this is noncomparability of the indicators obtained and an erroneous assessment of actual expenditures.

The development and issuance in recent years of a number of industrywide standard practices for all branches of industry, on which industry scientific-research institutes have based the establishment of industry standard practices and instructions, have not eliminated the noncomparability of many statutes since they do not consider in full measure the peculiarities and the similarities that are characteristic for the industries. Therefore, the indicators that are computed for mutually interchangeable fuel and power resources are not comparable. This leads to the adoption of incorrect economic decisions and, in the final analysis, to great losses of state funds.

One of the most complicated methodological questions in assessing the comparative effectiveness of capital investment in developing the fuel-extracting branches of industry is the determination of specific capital investment.

There are now a large number of works on standard practices for computing this most important indicator. Some of them assume that specific capital investment is defined as the ratio of the sums of capital investment over a definite period of time to the total extraction of fuel (in tons, cubic meters or standard-fuel-equivalent tons) for the same period of time, according to the following formula:

$$K_y = \frac{\sum_{t=1}^{T} K_t}{\sum_{t=1}^{T} q_t t_t}. \qquad (1)$$

where K_y is specific capital investment, rubles per ton;

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[2] EKONOMICHESKAYA GAZETA, 16 December 1961.

[3] Ibid.

K_t is capital investment in the development of an industry (or enterprise) in the t-th year, thousands of rubles;
q_t is the fuel extracted in the t_i-th year, thousands of tons; and
t_i is the corresponding computational year.

Such a method for computing specific capital investment does not stand up under criticism. It is known that the extraction of fuel in various periods is the result of capital investment which has been converted to material values in fixed industrial-production capital, not only during the given time segment but also in previous years. Theoretically, it is not justifiable to include the effect of past capital investment for the given period, since this leads to an incorrect conclusion in practice.[4]

The book, "A Long-Term Program for Capital Investment,"[5] proposes that specific capital investment be defined as the ratio of total capital investment to the total recovery of fuel during the whole period of development of a field or a group of fields (thus, for gas fields of the North of Tyumenskaya Oblast, this is set in the amount of only 2.1 rubles per 1,000 m^3 of annual recovery).

Taking that same position is K. N. Milovidov, who proposes to divide capital investment for the exploration of the fields during the whole period, which is computed to take the time factor into account, by the total recovery of oil, which is determined by taking the time factor into account for that same period. He notes that "in this way the amount of specific capital investment can be interpreted as the minimally necessary price of output that will enable the capital resources to be completely recovered."[6] [illegible] specific capital investment estimated by the author is 3.83 rubles/ton of oil, or, taking the time factor into account, 2.12 rubles/ton.

Although the economic essence of the indicator for specific capital investment determined by this method is more than questionable, its quantitative expression is close to the total value of the expenditures for the renovation of the fixed industrial-production capital and for deductions for conducting geological exploration.

Such an approach is groundless in theory and unsuitable in practice, since the designs for development of oil and gas fields and mines are reviewed periodically as geological data are refined, the refined designs for development being considerably different in their technical and economic indicators from the original designs and operating schemes.

The economic sense of attributing the amounts of fuel extracted to one specific moment, at which its quantitative value is reduced 1.8-fold when the work cites oil recovery for 11 years, or 1.5-fold when the development period is reduced to 8 years, is completely incomprehensible.

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[4] We have in mind here the computation of specific capital investment without regard for the time factor.

[5] Dolgosrochnaya programma kapital'nykh vlozheniy [A Long-Term Program for Capital Investment]. Moscow, Ekonomika, 1974.

[6] Milovidov, K. N. "On a Standard Practice for Computing Average Annual Weighted Expenditures for Growth in Oil and Gas Recovery." EKONOMIKA NEFTYANOY PROMYSHLENNOSTI [Economics of the Oil Industry], No 6, 1979, p 8.

Computation of specific adduced expenditures is based on that same methodological base in the work, "Standard Practice Principles for Optimizing Development of the Fuel and Power Complex,"[7] where the expenditures are determined in accordance with the formula

$$P_i^c = \frac{\sum_{t=1}^{T} (K_{it} + H_{it})(1+E)^{Tc-t}}{\sum_{t=1}^{T} \Pi_{it}(1+E)^{tc-t}}, \qquad (2)$$

where K_{it}, H_{it} are the complete capital investment and annual expenditures for the i-th facility in the t-th year;
Π_{it} is the output of products of the productive capacity of the i-th facility in the t-th year; and
E is the standard coefficient for the discounting of expenditures.

Discarding that part of the formula that considers the time factor, formula (2) takes the form:

$$P_i^c = \frac{\sum_{t=1}^{T} (K_{it} + H_{it})}{\sum_{t=1}^{Tc} \Pi_{it}} = \frac{\sum_{t=1}^{T} K_{it}}{\sum_{t=1}^{Tc} \Pi_{it}} + \frac{\sum_{t=1}^{T} H_{it}}{\sum_{t=1}^{Tc} \Pi_{it}}. \qquad (3)$$

The expression $\dfrac{\sum_{t=1}^{T} K_{it}}{\sum_{t=1}^{T} \Pi_{it}}$ means nothing else but the ratio of the sum of capital investment for the t-th period to the total output of products during that period.

The recommendation that specific capital investment be computed for the total growth in fuel recovery for that same period is better substantiated. When computing the actual level of capital investment, this method reflects the degree of mastery of design capacity, and when designing and organizing the conduct of construction operations, it reflects the effectiveness of measures associated with bringing the enterprise up to design capacity most rapidly.

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[7] Metodicheskiye polozheniya optimizatsii razvitiya toplivno-energeticheskogo kompleks [Standard-Practices Principles for Optimizing Development of the Fuel and Power Complex], Moscow, Nauka, 1975.

When annual growths of recovery are identical, specific capital investment ordinarily is computed by this method, in accordance with the following formula:

$$K_y = \frac{\sum_{t=1}^{T} K_t}{\sum_{t=1}^{T} q_t}, \tag{4}$$

where q_t is the growth of fuel recovery in the t-th year in comparison with the base year, in thousands of tons.

As is apparent, the computation of specific capital investment in accordance with formula (4) does not differ in any way in principle from computation according to formula (1), and it has the same deficiencies.

In comparing the results of computations for specific capital investment under formulas (1) and (4), a sharp difference is observed in specific capital investment levels which, according to one of the variants for developing the fuel and power complex, proved to be more than 30-fold higher for oil, more than 6-fold higher for gas and 25-fold higher for coal, when computed in accordance with formula (4) rather than formula (1). The difference in the nature of change of these indicators by type of resource also was substantiated: if computed on the basis of absolute amounts, the specific capital investment was least for coal, but if computed on the basis of the absolute overall growth, the specific capital investment proved to be least for the recovery of gas (less than one-fifth that for the recovery of oil).

Usually, the computation of specific capital investment on the basis of absolute growth in the extraction of fuel assumes that new capacity is introduced uniformly during the year. Actually (with rare exceptions, which can include, in particular, the oil and gas recovery industries), there is some time lag in introducing capacity, the coefficient that considers the time shift in introduction of capacity being 0.35, according to current assessments. Moreover, as a rule, capacity is introduced far from uniformly by year. Because of this, a consideration of growth by year is necessary for a correct assessment of capital investment effectiveness in respect to absolute total growth in amounts of production, savings or introductions of capacity.

Despite the more reliable results obtained in computing specific capital investment based upon absolute total growth in the extraction of mineral fuel during the period being analyzed or forecasted (usually 5 years), it is unsound in theory and it can lead in practice to disorientation in an evaluation of the level of specific capital investment, since it does not consider reduction of the productivity of the existing fixed industrial-production capital.

Under this scheme, the computation of specific capital investment, based upon absolute growth of fuel extraction is more justified. As M. M. Brenner considers, this indicator is the only one that meets the requirements of economic planning.* The methodology of such a computation is extraordinarily simple. It is based upon determination of the difference in the amounts of fuel extraction for two index years and the later division of capital investment by this difference.

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*See M. Brenner. "On Economic Evaluation of the Extraction of Various Types of Fuel." PLANOVOYE KHOZYAYSTVO [The Planning Activity], No 8, 1961, p 65.

The dynamics of actual specific capital investment in a computation based upon absolute growth of fuel extraction for the periods 1961-1980 are presented in table 1.

Table 1

Dynamics of Specific Capital Investment in the Development of Fuel Extraction (in a computation based upon absolute growth of recovery)

(as a percent of specific capital investment in natural gas recovery for 1961-1965)

Type of fuel	Years			
	1961-1965	1966-1970	1971-1975	1976-1980
Natural gas............................	100	239	275	246
Crude oil............................	228	294	350	755
Coal................................	$\frac{172}{706}$	$\frac{180}{1,820}$	$\frac{168}{1,005}$	$\frac{224}{\text{49-fold}}$

Different methods are now being used in computing this indicator in the fuel-extracting branches of industry. In the oil and gas recovery industries it is determined as the ratio of all capital investment to growth in the recovery of oil and gas, and in the coal industry--without counting capital investment aimed at maintaining and reequipping existing enterprises, which is 60-75 percent of all capital investment in development of the industry. Although this method for computing specific capital investment in the coal industry also corresponds to USSR Gosplan standard-practice instructions, which note that, "for the extractive branches of industry...for analytical purposes, effectiveness indicators can be computed...for capital investment only for expanded reproduction of capital and capacity, that is, after subtracting the capital investment that goes to compensating for the planned retirement of capital and capacity,"[9] this produces a noncomparable level of specific capital investment in some branches of the fuel extracting industry. In this connection, the specific capital investment, based upon the absolute growth of coal, is given in two variants in table 1: according to the standard practices used (the numerator) and according to the comparative method (the denominator), not counting capital investment in the coal preparation plants.

It is evident from table 1 that while the ratio of specific capital investment that is computed on the basis of absolute growth in the recovery of natural gas, crude oil and coal, in accordance with the existing standard practices for computing them, was 1:2 and 3:1.7 in the corresponding industries in 1961-1965, according to the comparative method it was 1:2 and 3:7.0 and, in 1976-1980, it was, respectively, 1:3 and 0:0.9, and 1:3 and 0:20. Thus, taking into account capital investment for maintaining the achieved level, specific capital investment in coal mining has turned out to be 20-fold more during the 10th Five-Year Plan than for the recovery of natural gas and almost 3-fold more than for the recovery of oil.

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[9] "Metodicheskiye ukazaniya k razrabotke gosudarstvennykh planov razvitiye narodnogo khozyaystva SSSR" [Standard-Practice Instructions for Working Out State Plans for Development of the USSR's Economy]. Moscow, Ekonomika, 1974, p 289.

With all the simplicity of computing specific capital investment based upon absolute growth of fuel extraction, this method is inadequate by virtue of the special conditions for developing the fuel-extracting branches of industry.

In the operating practice of the oil and gas recovery industries, there are often cases where the recovery of oil (or gas) during the development of one field or another is reduced (this is characteristic for old regions with declining recovery). Then the indicator of specific capital investment, which is computed on the basis of absolute growth of recovery, acquires an irrational form. Despite this, investment of resources in developing such a field proves to be justified, for, without this investment, a more rapid reduction in fuel extraction would occur. Such a situation is created sooner or later at various basins (or mines) in the mining of coal. Moreover, when computing specific capital investment based upon absolute growth of fuel extraction, an extraordinarily complicated task arises: to subtract from the results of production--growth in the extraction of oil, gas and coal--that part that is obtained by improving the use of fixed industrial-production capital without additional capital investment.

"The Temporary Instructions for Determining the Comparative Savings Achieved in the Extraction and Transport of Interchangeable Types of Fuel" recommends that specific capital investment be computed "for newly introduced (or planned) fuel extracting facilities (enterprises) by dividing the total capital investment in the newly introduced facilities (or regions as a whole) by their annual productive capacity or, in the absence of such data, by annual average productive capacity, or in the absence of this data, by the average annual recovery of fuel over a lengthy period of the activity of these fuel-extracting facilities or enterprises."[10] In so doing, it is recommended that the average annual fuel recovery be determined for the basic period of operation of the fields (or basins). As far as we know, this point of view was first expressed by A. Ye. Probst.[11]

In our opinion, said method for computation has a number of essential deficiencies. The main one is the impossibility of reducing the indicators for the fields to indicators for specific capital investment based upon the extraction of one energy source or another for the country as a whole, or for a republic or region. It is known that the dates of introduction and "abandonment" of fields (or basins) differ sharply from the basic period of operation, because of which it is practically impossible to reduce to one denominator both capital investment spread over a period of time, and recovery. In computing forecasted specific capital investment based upon the indicators for the development of individual fields, substantial deviations of the forecast indicators from the actual indicators occur, for the actual indicators of development very frequently differ from the designed indicators, and the necessary revisions are made in the design itself, as the development of the fields is observed.

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[10] Vremennaya instruktsiya po opredeleniyu sravnitel'noy ekonomichnosti dobychi i transporta vzaimozamenyayemykh vidov topliva [Temporary Instructions for Determining the Comparative Economy of Extracting and Transporting Interchangeable Types of Fuel]. Moscow, 1963, pp 4-5.

[11] See A. Ye. Probst. Metodology sopostavleniye ekonomicheskikh pokazateley po dobyche i transportu otdel'nykh vidov toplive [Methodology for Comparing Economic Indicators for the Recovery and Transport of Various Types of Fuel]. Moscow, 1961.

Moreover, as various situations arise, frequent resort is made knowingly to deviations from the designs (for example, for greater concentration of the network of wells). Usually the design for the development of fields is "completed" with achievement of maximum recovery, as a result of which it is not possible to consider all the capital investment that goes to maintaining the achieved recovery level after the maximum level is achieved. After this, capital construction is financed through funds allocated by the production associations. The computation of specific capital investment for individual fields is in and of itself an extraordinarily labor-intensive process, for a large number of oil and gas fields must be covered by it.

The economic essence of an indicator of specific capital investment that is computed this way is close to the indicator of specific capital intensiveness, although its quantitative expression is, by virtue of a number of factors (for example, the circumstance that exploration wells that do not produce are not taken up on the books of the enterprises, and those that produce are received on the books only in accordance with the cost of development wells), substantially higher than the specific capital intensiveness. This method of forecasting specific capital investment for all types of fuel, especially for the coal basins, whose period of development continues for more than 50-60 years, can lead to erroneous results. Neither should one forget that in the oil and gas recovery industries the concept itself of production and design capacity are absent. An attempt to define the production capacity of an oil-and-gas recovery enterprise as the maximum permissible withdrawal per unit of time (per year) with the observance of an optimal regime for operation of the well inventory is scarcely justified. Maximum permissible withdrawal is the optimal recovery of oil or gas, which should coincide with the actual level of recovery, since the productive capacity includes the concept of the maximum possible level of production of output with the most effective use of the main fixed industrial-production capital, taking the work experience of advanced production workers into account.

Moreover, the aggregate capital investment in the recovery and transport of various types of fuel and power-engineering resources can be determined by this method of computation, since the transporting arterial (oil pipeline, gas pipeline and railroad) should be designed for the maximum volume of fuel recovery. This, however, does not exclude the possibility of using the indicator of specific capital investment, which is computed on the basis of the whole main period of operation of the fields, for selection of the most desirable development variant.

USSR Gosplan's Standard Practices Instructions recommend that specific capital investment in oil recovery be computed on the basis of growth in capacity. In so doing, it is recommended that the computation be made on the basis of newly introduced capacity (M_H), which is determined in accordance with the formula:

$$M_{\text{н}} = C_{\text{н}} Д_{\text{н}} \cdot 365 \cdot K_{\text{э}}, \tag{5}$$

where $C_{\text{н}}$ is the number of new wells;
$Д_{\text{н}}$ is the average daily flow rate of the new wells; and
$K_{\text{э}}$ is the coefficient of operation.

The number of new wells is determined by the formula

$$C_н = \frac{Q_н}{Д_н T}. \qquad (6)$$

where υ_H is the recovery of oil from new wells, in tons; and

T is the number of days of operation of one well in the year it is introduced into operation.

A deficiency of this methodology is that it considers the possibilities of increasing the productivity of existing (old) wells by methods of maintaining formation pressure (the drilling of additional injection holes, transference of the injection front, the "ripping" of formations, center-to-edge flooding, conversion of wells from one operating method to another, and so on). Meanwhile, in the older oil regions, at old fields, growth in the capacity of existing wells through these measures can prove to be substantially higher than through the introduction of new wells, and in individual cases practically all newly introduced capacity can be obtained through the existing well inventory.

It should be noted that the most varied methods for computing specific capital investment are used in practice in computing specific capital investment in various branches of the fuel-extraction industry; this does not enable a comparative analysis to be made. Most paradoxical is the method being applied in the coal industry, in which two methods of computation are being used at once--on the basis of new capacity, and on the basis of the maintenance of the mining of coal and the reequipping of underground and strip mines. In so doing, specific capital investment in new capacity is defined as the ratio of capital investment in new construction to the capacity that has been introduced during the appropriate period, and, for the maintenance of the mining of coal and the reequipping of existing underground and surface mines, it is defined as the ratio of capital investment to the total mining of coal for one and the same period. The dynamics of specific capital investment, according to the methodology used in analysis and planning practice, is presented in table 2.

Table 2

The Dynamics of Specific Capital Investment in Coal Mining in Accordance with Existing Standard Practice

(in percent)

Capital investment indicator	Years			
	1961-1965	1966-1970	1971-1975	1976-1980
Based on new capacity..................	100	104.9	97.7	130.6
Based on maintenance and the reequipping of underground and strip mines.	100	117.3	134.0	148.7

It is evident from table 2 that the pace of growth of specific capital investment for the maintenance and the reequipping of underground and strip mines outpaces the rate of growth of specific capital investment in new capacity. However, it is not possible to determine average specific capital investment for coal mining and the rate of its growth under the existing standard practice. Actually, while specific capital investment for new capacity in 1971-1975 was reduced by 6.9 percent in comparison with 1966-1970, it was increased by 14.3 percent for the maintenance and reequipping of existing underground and strip mines.

In this case, the ratio of specific capital investment for the maintenance and reequipping of underground and strip mines and for new construction was 1:1.8 in 1961-1965, 1:16 in 1966-1970, 1:13 in 1971-1975 and 1:16 in 1976-1980.

Actually, of course, the average specific capital investment has been changed, and it cannot be determined by means of the existing standard practice for computing specific capital investment in the coal-mining industry.

For the recovery of natural gas, the existing standard practice is based on average indicators for the basic period of development of the gas fields, during which 65-70 percent of all the gas is extracted, and, for the recovery of oil, it is based upon a computation for new capacity.

The level of specific capital investment for the mining of coal K_y^c that is comparable with oil and natural gas can be found in accordance with the formula

$$K_y^c = K_y^{н} \frac{100}{K}, \qquad (7)$$

where K_y^c is the specific capital investment for coal mining (based on new capacity), in accordance with existing standard practice, in rubles/ton and rubles/ton of standard fuel equivalent;
100 is total capital investment, percent; and
K is the share of capital investment in growth of coal mining, percent.

Table 3 shows specific capital investment in the extraction of oil, natural gas and coal, based upon existing standard practice:

Table 3

The Dynamics of Specific Capital Investment in the Extraction of Oil, Natural Gas and Coal (computed for new capacity)

(in percent)

Type of fuel and power resources	Years			
	1961-1965	1966-1977	1971-1975	1976-1980
Crude oil	100.0	105.2	89.2	129.4
Gas	100.0	88.6	73.2	89.8
Coal	100.0	109.0	110.9	135.3

A steady rise in specific capital investment in the mining of coal is evident from table 3, the ratio between the level thereof in the extraction of coal and oil remaining practically unchanged during 1961-1965 and 1976-1980, with the ratio for the extraction of coal and natural gas falling.

While under the existing method, the ratio of specific capital investment in the extraction of natural gas, oil and coal, which is computed for newly introduced capacity, was 1:1 and 1:1.3 in 1961-1965, under the comparison method it was 1:1 and 1:3.8, while in 1976-1980 it was, respectively, 1:1 and 9:2.4, and 1:1 and 9:10.9.

Thus, while the existing standard practice gives a practically close level of capital investment in the extraction of oil and coal where there is an insignificant excess thereof in comparison with the recovery of natural gas, where all the indicators are reduced to a comparable form, the specific capital investment in coal mining has been increased practically 3-fold.

The growth in specific capital investment in coal mining was caused by a continuous rise in the share of capital investment aimed at maintaining and reequipping existing underground and strip mines.

In oil recovery, specific capital investment initially was increased somewhat by virtue of a number of circumstances (increase in drilling depths and a worsening of the ratios of capital investment going to expanded and simple reproduction), and then it was reduced because of the introduction of intensive development of a number of oilfields of West Siberia. Later, because of a reduction in the flow rates of newly introduced wells in West Siberia and a worsening of the ratio between capital investment aimed at expanded and simple reproduction, it has again increased substantially.

As for natural gas, the conquest of large gas fields and the ratio of capital investment aimed at expanded and simple reproduction, which was stable prior to 1971-1975, led to a 25-percent reduction of specific capital investment right up to 1971-1975. Despite the depletion of the gas reserves of a number of large gas fields in traditional recovery localities and shift of recovery to areas with complicated natural, climatic and economic-geography conditions (the North of Tyumenskaya Oblast), a further reduction of specific capital investment by 3 percent occurred there in 1976-1980 in comparison with 1971-1975.

A critical analysis of the existing standard practice for determining specific capital investment in the fuel-extraction branches of industry that has been conducted indicates that it needs further improvement.

In this case, the main prerequisite for such an improvement should be the unity of standard practices for computing specific capital investment in all branches of the fuel-extracting industry and a comparability of their levels for the various types of fuel and power resources.

There are two alternative approaches to this question. The first is orientation to the existing standard practice of computing specific capital investment in the coal industry. Then, in order to reduce them to comparable form, it is necessary to subtract from capital investment in the development of the oil and gas recovery industries the portion of it that goes to maintenance of the achieved level of recovering oil and gas. This method, as has been noted already, does not consider all the capital investment in the development of the industry and does not allow a generalized picture to be portrayed of change in specific capital investment, because of which its use is unjustified.

It is more correct, in our opinion, to compute specific capital investment for newly introduced capacity, which goes both to compensation for the drop in the extraction of fuel from existing fixed industrial-production capital and to an increase thereof. Replacement of fixed capital that is falling into disuse because of physical wear or obsolescence occurs in all branches of industry. Thus in 1976-1978 the ratio of funds for amortization and for accumulation for gross capital investment in the USSR's national economy was 68:32 and for industry it was 55:44. The introduction into operation of fixed capital as a ratio of the amount of gross capital investment in the national economy was 92 percent (including 73 percent for growth and 19 percent for replacement). The remaining 8 percent of capital investment was made up of growth in uncompleted construction and expenditures that do not incorporate fixed capital.

However, the computation of specific capital investment in new capacity requires further improvement of the standard practice for making the computation.

The computation of new capacity for recovering oil and gas, taking into account an increase in recovery from old wells, can be determined in accordance with the formula:

$$M_{\text{н}} = Q_{\text{с2}} - Q_{\text{с1}} + Q_{\text{н}} - q_{\text{с2}} \cdot 30.4 \cdot K_{\text{к.с2}} \cdot K_{\text{э.с2}} - \\ - q_{\text{с1}} \cdot 30.4 \cdot K_{\text{к.с}} \cdot K_{\text{э.с1}} + q_{\text{н}} \cdot 30.4 \cdot K_{\text{к.н}} K_{\text{э.н}},$$

where $Q_{\text{с1}}, Q_{\text{с2}}$ is the annual recovery from old wells prior to and after taking measures that require capital investment, millions of tons;

$Q_{\text{н}}$ is the annual recovery from new wells, millions of tons;
$q_{\text{с1}}, q_{\text{с2}}, q_{\text{н}}$ is the average daily flow rate of old and new wells in the t-th year prior to and after taking measures, tons/day;
$K_{\text{к.с1}}, K_{\text{к.с2}}, K_{\text{к.н}}$ is the annual coefficient of cylicity; and
$K_{\text{э.с1}}, K_{\text{э.с2}}, K_{\text{э.н}}$ is the coefficient of operation of the wells.

Let us cite the following arbitrary example (table 4):

Table 4

Indicator	1st year	2d year	3d year
First region			
Total oil recovery, millions of tons	62	75	94
From old wells	58	68	85
By intensifying recovery	10	12	15
From new wells	4	7	9
Capital investment, millions of rubles	250	350	400
Second regions			
Total oil recovery, millions of tons	85	86	87
From old wells	78	77	75
By intensifying recovery	14	18	22
From new wells	7	9	12
Capital investment, millions of rubles	250	350	400

While capital investment in the development of the first and second regions are equal, an orientation to an absolute growth of oil recovery yields a lower specific capital investment in the first region, whereas, taking compensation for the natural drop in oil recovery into account, its growth for the given region will be lower, while the specific capital investment, consequently, will be higher, than for the second region.

Where funds are invested only to develop the first region, total oil recovery is 126 million tons the first year, 134 million tons the second and 147 million tons the third year, but with the investment of funds to develop the second region, the figures are, respectively, 133, 142 and 157 million tons. Thus, with higher absolute growth in oil recovery in the first region, taking into account the natural reduction thereof, specific capital investment proves to be higher than with the investment of funds for development of the second region.

In the mining of coal it is necessary to consider all capital investment associated with both the introduction of new capacity and the maintenance of the achieved level of mining and the rebuilding of enterprises, and all newly introduced capacity, both at new and at existing enterprises, that is associated with the buildup of the mining of coal and with maintaining capacity.

Insuring a comparable level of specific capital investment in the development of individual branches of the fuel and power complex is impossible without consideration of an identical set of direct capital investments. In this regard, capital investment in coal preparation should be viewed as an investment of funds not in the treatment of coal but in the preparation of it for sale, that is, the same as capital investment in the treatment of crude oil (dehydration, desalting and stabilization) or of gas (removal of moisture, separation of gas-condensate from the gas, and so on).

The solution of many tasks (the determination of economically justified proportions within the fuel and power complex, the amounts of fuel recovery in one region or another, rational zones for transporting fuel from extracting regions to consuming regions, and so on) is impossible without a computation of the aggregate specific capital investment in geological exploration, recovery, delivery, storage and use (taking the ecological factor into account). Therefore, determination of total specific capital investment in the extracting and transporting of fuel deserves special attention.

Difficulties in accounting for specific capital investment for the delivery of coal are caused not so much by the fact that rail transport is not included in the fuel and power complex as by determination of the share of the movement of coal by route in the total amount of freight hauled. Moreover, capital investment for hauling coal often makes not for growth in freight traffic but for all the traffic, leading to a substantial artificial reduction in specific capital investment, since the capacity (or amount) of freight traffic for any year is determined not only by (and, as a rule, not so much by) capital investment for the given period, as by all the capital investment in development of the given railroad (or route).

For a forecast period, the computation of capital investment in rail transport by the direct method--the determination of capital investment for an increase in rolling stock (electric or diesel locomotives and freight cars), an expansion of the throughput of existing railroads or the construction of new ones, an expansion of railroad-yard structures (tracks and so on) or the construction of new yards--is the most rapid method and it is precise enough.

Complexity in the computation of specific capital investment in gas-pipeline transport lies not only in the occurrence of numerous withdrawals of land from other use but also in the fact that the gas of one gas-producing region can "settle," that is, be consumed, in another gas-producing region (for example, Orenburg gas arrives partially in the Donets-Dnepr Economic Region), and the gas of a second gas-recovery region can go to a third (Shebelinskoye gas goes to the Moldavian SSR and to export).

Given the diversity of the situations that arise in computing specific capital investment for the transporting of fuel, one thing is common to them: capital investment should be allocated to an absolute growth in throughput, which, regardless of the degree of loading of the arterial, will characterize the newly introduced capacity.

The proposed standard practice corresponds completely to the Standard Practices for the Development of Tekhpromfinplans [Technical, Industrial and Financial Plans] of associations (or combines) and enterprises, which call for definite specific capital investment per unit of capacity introduced, with just this difference, that it considers the specific peculiarities of fuel-recovery branches of industry and of transport.

When computing specific capital investment for the purposes of evaluating its comparative effectiveness, it is necessary to consider the construction lag and the lag in assimilation, the time factor, interlinked capital investment, and so on, an elucidation of the methodological peculiarities in the computing of which in the fuel-extracting branches of industry goes beyond the scope of this article.

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MEETING DISCUSSES RESOURCES USE IN BUILDING WEST SIBERIAN PIPELINES

Summarized Report of Meeting

Moscow MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE in Russian No 6, 1981 pp 38-45

[Report of meeting: "The Rational Use of Material and Labor Resources in the Construction of Trunk Oil and Gas Pipelines"]

> [Text] At the "round table" of the journals MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE, PLANOVOYE KHOZYAYSTVO, SOTSIALISTICHESKIY TRUD and KHOZYAYSTVO I PRAVO.

The boosted development of West Siberia's oil and gas complex is one of the stages that marks the turn of the national economy toward solution of the diverse problems connected with improving the people's welfare. The significance of this complex lies in the natural reserves of hydrocarbon raw materials, which will permit an optimal structure to be selected for the fuel-and-power balance, growth of the chemical and other industries to be speeded up, and the requirements of the countries of socialist collaboration to be satisfied more completely.

West Siberia's role in execution of the Communist Party's economic policy was noted at the 26th CPSU Congress: the recovery of oil and gas and the transporting of it to the European part of the country are to be most important elements in the energy program of the 11th and 12th Five-Year Plans. The base for this has been established. In 1980 more than 312 million tons of oil (including gas condensate) and 156 billion cubic meters of gas were taken from the ground in northwestern Siberia.

The collectives of oil and gas field workers, builders and all workers engaged in operating Tyumenskaya Oblast's oil and gas industry received with inspiration the letter of greetings of CPSU Central Committee General Secretary, Chairman of the USSR Supreme Soviet Presidium L. I. Brezhnev that appraised highly their work during the 10th Five-Year Plan. "...The outstanding successes," says the letter, "have been the result of the coordinated, creative work of thousands of wage workers, engineers, scientists, technicians and white-collar workers in the conquest of the oil and gas riches of West Siberia, the active work of many laboring collectives of the country in providing the oil and gas complex with advanced machinery, equipment and materials, and the great political and organizing activity of party, soviet, trade-union and Komsomol organizations."

"The Main Directions for the Economic and Social Development of the USSR During 1981-1985 and During the Period up to 1990" calls for a rise in the quality of the construction of facilities for pipeline transport and in their operating reliability, a substantial growth in the productivity of the gas pipelines that are being erected, the execution of measures to improve the automation of compressor stations, and the development and introduction of the technology of building pipelines the year round in regions that are difficult of access and have complicated natural and climatic conditions. Implementation of the indicated requirements is binding to a great extent on all participants in the construction of oil and gas trunk lines, which are characterized by great length and mobility of the work front.

Decisive factors in carrying out the operating programs are the quality of the planning, technical progress, precision in the deliveries of equipment, pipe and machinery to the facilities due for early startup and to the lines to be laid, a strengthening of performance discipline, a high degree of organization of labor, and timely creation of the production, social and personal-services infrastructure in the regions being developed. The urgency of these questions served as the grounds for a "round table" meeting of the journals MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE, PLANOVOYE KHOZYAYSTVO, SOTSIALISTICHESKIY TRUD, and KHOZYAYSTVO I PRAVO and of representatives of party, economic, trade-union and Komsomol organizations of Tyumen'skaya Oblast. The problem, "The rational use of material and labor resources during the construction of trunk oil and gas pipelines," was discussed at the meeting.

Following is a report of the meeting.*

In characterizing the oblast's economy, B. Trofimov, a division manager of the Tyumenskaya Oblast CPSU Committee, noted the contribution of workers to the development of the oil and gas industry. During the 10th Five-Year Plan the annual growth in the recovery of oil (including gas condensate) in the oblast was 165 million tons, of gas 122 billion m^3. More of these products are being taken from Tyumen' oil and gas fields than the country took from all its oil and gas fields 16 years ago. According to the scientists' computations, the production of gas can be brought up to 1 trillion m^3 per year in the future.

During the 26th CPSU Congress other data also were cited. During the next five-year period, almost as much oil and twice as much gas must be given as were produced in the preceding 15 years. The recovery of oil and gas in the complex that has been created now exceeds 10 percent of the world's recovery.

The largest gas-transport systems will have their start in the North: Urengoy-Punga-Ukhta-Torzhok, Urengoy-Punga-N. Tura-Perm'-Kazan'-Gor'kiy-Moscow, Urengoy-Chelyabinsk, and others. In order to deliver Tyumen' gas to the country's central and western regions, another 16,600 km of pipe 1,420 mm in diameter are to be laid during the new five-year plan. This is 1.7-fold the amount laid in 1976-1980. The capacity of installations for the integrated treatment of gas in West Siberia is being increased by 102 billion m^3 per year.

Further mastery of Tyumen' oil and gas fields, B. Trofimov emphasized, depends upon the coordinated work of all elements of the oil and gas recovery complex, particularly the builders of pipelines, compressor, pump and transfer stations, and other structures. Pipeline transport is one of the most economical and effective of subbranches, but, at the same time, it is intensive in the use of materials and labor. In the Siberian environment the amount of expenditures of all types of resources on the erection of facilities for the pipeline system is especially appreciable. Their rational use presupposes improvement of the relationships among all construction participants, as required by the CPSU Central Committee decree of 12 July 1979 about improving planning. The elimination of interindustry and interagency barriers is necessary from the point of view of nationwide interests. Therefore, questions of the planning and management of construction work occupies a central place in the discussions.

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*Similar material is being published in the journals PLANOVOYE KHOZYAYSTVO, SOTSIALISTICHESKIY TRUD and KHOZYAYSTVO I PRAVO.

Deputy chief of the VPO [All-Union Industrial Association] Tyumengazprom [Gas Industry of Tyumenskaya Oblast] V. Tandalov, chief of Glavsibtruboprovodstroy [Main Administration for Pipeline Construction in Siberia] N. Kurbatov, chief engineer of Giprotruboprovodstroy [State Institute for Pipeline Design] I. Yalovskiy and others spoke about the need to improve the planning of construction and installing work. At present the amounts of this work for the various facilities that are established by the clients (Minnefteprom [Ministry of Petroleum Industry] and Mingazprom [Ministry of Gas Industry]) and by the contractors (Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] and Minpromstroy [Ministry of Industrial Construction]) do not coincide. Such nonconcurrence is telling on the use of material resources and the quality of construction. Often the linear part of the pipeline is erected more rapidly than the surface facilities.

Plans should call for synchronization of the work. In other words, compressor stations must be erected simultaneously with the laying of the pipelines. The standardization of facilities under construction--of compressor stations, for example, which include a number of auxiliary and subsidiary structures--is poor. There are several designs for oil pipelines. It is difficult to achieve the simultaneous erection of storage installations, the heating and waterline networks, and so on. The engineering solutions for them for the various gas pipelines differ in layout of the area, degree of engineering preparation, construction members, and placement of communications lines and auxiliary services. It would seem that the unification of facilities can give greater economic benefit. In the opinion of G. Shmal', general director of the Sibkomplektmontazh Association, millions of rubles can be saved by unifying documentation. A persistent requirement also arises that designs be reviewed as a set.

The sequence of construction has not been resolved with finality. Glavsibtruboprovodstroy does not have a scheme for an integrated buildup of pipeline facilities, although a plan for recovery exists for the fields. Also the question about where to lay the pipeline is not clear. The main administration has to put into operation more than 4,000 km of trunk pipeline in a year. At what point should construction start that is weakly coordinated with the recovery plan? Posing these questions, N. Kurbatov in essence emphasized the necessity for integrated planning. It should be laid down in the basic preplanning document--the design. Its quality, as N. Kurbatov and G. Shmal' confirm, lags behind the requirements of modern construction. What, for example, is the justification for locating compressor stations about 100 km from each other? Why do installations for the integrated treatment of gas take up great space? According to the rules, the main administration is required to comment on the design and to introduce revisions. However, this requirement is not being observed. The design is accepted, approved and issued for further work without expert review.

Such a practice often results in nonexecution of engineering preparation of the sites for compressor and oil-pumping stations and other facilities. This work is not called for in the plans and it is not financed. Meanwhile, soil fill, drainage, access-route arrangements, and so on are necessary in order to make the construction project accessible. Erection of the Ob' Compressor Station was prolonged because of poor engineering preparation of the site. At a marshy construction site, 34,000 tons of sand were delivered instead of 50,000 tons. The schedule for startup of the station was missed.

The client above all needs the construction. But his representatives, as G. Shmal' confirms, do not visit the open site. Self-elimination of the client from monitoring the construction process (without considering the money allocated, the transmittal of documentation, and the signing of the report of the worker commission) leads to unfinished work and low-quality work being observed at finished construction projects. The client's responsibility in this case is disparaged.

Minneftegazstroy organization representatives consider that trunk pipeline facilities can be turned over in turnkey fashion, provided that the whole investment cycle, beginning with design, is carried out by the builders. Concentration of the material, labor and financial resources in the contractor's hands will avert their dispersion and preclude the unfounded appearance in designs of construction projects that do not provide for growth of capacity but are necessary to the client for some reason. The budget-estimated cost of construction will prove to be more reliable. Client organizations, it must be said, do not support this idea.

Chief of the Economic Planning Administration of Glavtyumenneftegazstroy [Main Administration for the Construction of Oil and Gas Industry Facilities in Tyumenskaya Oblast] N. Sergiyenko shared some considerations relative to the use of construction commodity output in the planning of indicators.

Its introduction will require a new approach to the formulation of plans. A facility can be brought up to complete readiness only by precise organization of the work, the concentration of available resources at the complexes that are due for early startup, the correct determination of the requirements for materials, and the elimination of nonproductive losses and expenditures. Material incentives for builders should depend upon the fulfillment of plans for the introduction of facilities and the turnover to clients of completely finished sections of the pipeline. A. Novikov (chief of the Economic Planning Administration of Glavsibtruboprovodstroy) remarks that everything is still lagging as before.

Planning flaws are visible in the following example. It was proposed to build 960 km of gas pipeline and 4 compressor stations in 1981 and 1,067 km and 4 stations in 1984. The cost of the work has been doubled, but the pipeline is practically the same length (the data were taken from a statement-order that was presented to Glavsibtruboprovodstroy). This example testifies to insufficient substantiation of plans.

Construction and installing work planning must begin from the bottom and be accomplished in several stages. Prior to the 1st of July, Minneftegazstroy and the client ministries report the control figures to the field. In a month these should be coordinated, the orders signed, and the design and budget-estimating documentation formulated.

It is absolutely mandatory that review of the statement and concurrence of the plan begin at the trust, which has at its disposal all the data and information about unfinished work that is needed for this. After revision at the main administration, the statements are sent to the ministry and USSR Gosplan, and, in reverse order after approval--to the main administration. The deadline for the introduction for each facility is established by quarter directly in the construction organizations, and after this the document is returned to the ministry.

Many deficiencies will be eliminated under this procedure.

In order to plan correctly, one must know the capacity of the construction organizations. There are several general standard procedures for determining this, and they contradict each other. A. Novikov considers that a standard practice is needed that will consider the specifics of the work individually for the laying of oil and gas pipelines and other facilities.

A. Sergiyenko noted that during the Ninth and 10th Five-Year Plan such a planning indicator as the rate of growth of labor productivity was about 3-fold higher in a main administration than in the branch (in construction). However, a fourth of the construction organizations that were in the main administration were not coping with the planned tasks. Where these are fulfilled unconditionally, the amount of construction work can be increased by an additional 15-19 million rubles' worth each year without increasing worker manpower.

Certain of the speakers (N. Kurbatov, G. Shmal' and A. Sergiyenko) raised the question of improving the management of construction work. This process has been consistent. But with the resubordination of trusts in the middle of the five-year plan, the main administration from whose structure the trust came cannot carry out the plan for construction and installing operations (even if the trust had overfulfilled it, it being subordinated to another main administration), and vice versa. Obviously, it would be more correct to consider amounts of overfulfillment in accordance with the annual reports of the main administrations for the corresponding years, and not at the end of the five-year plan.

Under the existing statutes, which were approved a decade ago, the maximal amount of work of trusts is set at a total of about 25 million rubles. They are doing 170-180 million rubles' worth of work with the former staffing schedule. But it is easier to organize a new trust than to revise the structure of an existing one.

In Novyy Urengoy, for instance, builders, oil and gas field workers and power-engineering workers have autonomous motor pools, communications systems, workers' supply and even bakeries. From the viewpoint not only of the pipeline builders but also of the national economy and from the standpoint of the development of the whole oil and gas complex, the activity of the various main administrations, trusts, associations and enterprises must be coordinated. An interagency territorial commission under USSR Gosplan located in Tyumen' will do this.

A most important prerequisite to the formulation of urgent plans for putting trunk pipeline facilities into operation is coordination of the construction process with the deadlines for the delivery of pipe, equipment, and so on, that is, with the supplying of materials and equipment.

A shortage of storage and of the necessary transport means and of vehicles in northern versions complicates the builders' work. The deputy chief of Glavtyumenneftegazstroy P. Nidzel'skiy described the use of equipment in the construction of trunk oil and gas pipelines. At present, out of the main administration's 5,500 transport units, only 15 percent are in northern versions. The KrAZ's operate satisfactorily at temperature gradients that are small from the point of view of Siberian conditions: from +25 degrees C to -25 decrees C. There are still no norms for motor-vehicle kilometerage in the severe regime of the North.

One still cannot say there is optimal use of construction equipment today. The same excavators that are at work in other parts of the country are also in use in West Siberia. The machines that are delivered, unable to endure the "northern load," wear quickly. The glass on the first pipelayers, based on Cheboksary Tractor Plant tractors, freezes up at -20 degrees C, and the tractor has to be serviced with several grades of oil.

Measures are now being taken to conduct year-round construction. But it is being held back by a lack of roads over which freight is delivered. Construction periods and costs for superlong pipelines depend upon the condition of road communications in Tyumenskaya Oblast. The transport service still lags behind the pace of erection. Mintransstroy [Ministry of Transport Construction] could participate more actively in building roads along the pipeline routes and within the oil and gas fields.

And the potential of river transport is being used poorly. Seasonal factors create additional difficulties.

In the opinion of B. Trofimov, the forces of specialized Mintransstroy organizations should be concentrated on the laying of hard-topped roads. Enormous advantages could be gained by laying power lines (LEP's) along the roads. Right now the compressor stations are operating on low-power current, alongside power facilities that are under construction. About 10 percent of the gas is being expended to bring turbine installations into operation. If there were LEP's, all the gas would go into the pipelines without losses. Automation of the compressor stations would also be increased.

[illegible]. Kurbatov noted inadequate regularity in the delivery of machines. They are being purchased at an outstripping pace, but this factor plays almost no role in the organization of supply, since it is not always known when and in what quantity the machines will be received. Delivering pipe in wholesale lots, often all at one time, makes its acquisition difficult: there are not enough funds for payment, and the bases were not designed for the simultaneous reception of excessive lots of pipe.

Chief of the Tyumen' Main Territorial Administration of USSR Gossnab V. Zaychenko proposed to include in the designs for construction an additional chapter that would touch on the supplying of materials and equipment. There is an extreme necessity for this. Design institutes do not call for capital investment for the creation of warehouses, considering them secondary facilities in comparison with sewerage, the waterline network, telephone and radio conduits, and so on.

In accordance with the 12 July 1979 decree of the CPSU Central Committee and the USSR Council of Ministers about improvement of the economic mechanism, supplying will be executed in accordance with the working drawings and budget estimates. However, a lack of design documentation for material and equipment supply will create definite difficulties. The conversion to direct long-term economic ties should be accompanied by the introduction of a system of material incentives for suppliers, supply-organ personnel and transporters who conscientiously carry out contractual commitments and, simultaneously, by an intensification of the responsibility of manufacturing enterprise supervisors for the nonfulfillment of commitments.

In order to guarantee that construction projects are supplied with equipment and to eliminate operating problems quickly, it is desirable to create reserves of materials outside the agencies. Local USSR Gossnab organs have at their disposal large, highly mechanized warehouse premises, and they could take upon themselves completely the functions of distributing all products of which there are severe shortages.

In the opinion of the Glavsibtruboprovodstroy Supply Administration Chief I. Okunev, machines, equipment and building materials that are intended for West Siberian and Far Eastern construction projects must be delivered not in the fourth quarter but by 20 August. V. Zaychenko supports his proposal that consumption norms for materials for construction be reviewed. He considers it desirable for main administrations to form a group or an organ for monitoring the preservation and expenditure of material resources. Moreover, the USSR Gossnab system must be granted the right to redistribute above-norm surpluses. Then gas-field workers will not hold shut-off fixtures "in reserve" at a time when oilfield workers are in severe need of them. The construction of large storage complexes in such cities as Surgut, Nizhnevartovsk, Novyy Urengoy and Nadym have become necessary. It would be possible to send the necessary materials quickly to any facility.

In returning to the suggestion that consumption norms for material resources be reviewed, the following must be recalled. The balancing of plans for the introduction of facilities into operation is unattainable if there is no reliable standard basis for planning. Consumption norms for materials that are established per million rubles' worth of construction and installing work have been oriented to the fulfillment of tasks in accordance with the "gross." The system of standards thus is not linked with the final construction product, and it does not consider increased wear of machinery, seasonal idle time, the consumption of fuel and lubricants, and so on. The effect of natural and climatic factors on labor productivity are not taken into consideration. NIPIESUneftegazstroy [Scientific-Research and Design Institute for the Economics, Supply and Management of the Construction of Oil and Gas Industry Enterprises] workers consider that standards for construction work that is performed by Minneftegazstroy organizations in West Siberia should be determined on the basis of the actual working conditions in this region. Such standards, which rely upon concrete experience and reporting data, furnish, in their opinion, a good foundation for plan computations.

S. Stanev, chief engineer of the Trunk Oil Pipeline Administration, suggests that many losses can be avoided if standards documents for construction in permafrost are developed. Work is to be done in this zone during the 11th Five-Year Plan. One must think about how to eliminate negative buoyancy and the destruction of pipe laid in the ground. At present there are no such construction norms. Neither are there testing grounds for checking on the reliability, resistance to wear, durability and other parameters of the pipe. Unfortunately, design institutes that are concerned with geocryology have not been involved in solving the problems that face Siberian pipeline builders.

V. Zverev, the Chief State Arbitrator of Tyumenskaya Oblast, cited cases where underdeliveries of pipe and other equipment are aggravated by the negligent attitude of some officials toward commitments. Sometimes materials become unsuitable because of a lack of storage for materials. Obviously, competent organs should give thought to the question of increasing pecuniary responsibility for violating the rules for storing products and of tightening up the procedure for reimbursement for harm that has been caused. The deduction from material incentive funds of penalties that have been exacted should have an effect on the cost-accounting interests of the parties to the contract. V. Zverev considers penalties for poor management mandatory. He pointed to a number of oversights in the work of state commissions that accepted facilities that had been readied. Sometimes the acceptance reports mentioned a lack of reserve for supplying electricity or of a domestic-amenities unit, sewerage, or access routes, as if they did not affect the operation of the pipeline and the transfer pumping stations. Such cases must be categorized as a violation of state discipline.

N. Kurbatov, G. Shmal', V. Zverev and P. Nidzel'skiy spoke about the negative phenomena associated with insuring the preservation of freight being hauled. There is still no proper interaction of haulers--rail, maritime, river, automotive and air transport. Investing full pecuniary responsibility in the hauler for the amount of the cost of the whole breakdown of equipment, not for the amount of the parts expended, will spur, it must be supposed, and actually provide for the preservation of freight.

Speakers at the round table connected up the measures that were aimed at the rational use of material resources with the goals of the effective conduct of the activity and with the final results of the construction work. Raising the throughput of pipeline systems, industrializing construction and installing work, and accelerating the pace of scientific and technical progress--the final results depend to the greatest degree upon how these tasks are solved.

N. Kurbatov called the attention of those at the meeting to the necessity to increase the unit capacity of elements of the gas pipeline route. Today the trunk pipeline consists of pipe 1,420 mm in diameter, and the pressure of the gas in them is 75 atmospheres. The annual productivity of one strand is in the 30-35 billion m^3 range. These parameters are higher than anywhere else in the world. Nevertheless, in looking ahead, it must be said that the level of the system's unit capacity is inadequate. There is no economic justification for converting to higher pressures and larger diameters. The use of clad pipe will help matters. But experiments are needed, particularly under permafrost conditions. The client ministries (the oil and gas ministries) and their design institutes could undertake to build appropriate experimental sections for study of the new technology for delivering gas.

The indicated measures are associated most directly with a rise in the effectiveness of production and with the rational use of expensive pipe.

There exists an indicator for economically justifying compressor-station capacity for a definite diameter of pipe. If the pipe is 1,020 mm in diameter, then the station should have 3 gas-turbine units, each of 10,000-kw capacity (1 in operation, 1 in reserve, 1 in repair); if the diameter is 1,420 mm, then the unit's capacity should be 25,000 kw. There are no such units, so 8 machines will provide for the pipeline's productivity. The problem, consequently, is in the production of machines of higher capacity by Minenergomash [Ministry of Power Machine Building] enterprises.

Considerations relative to the realization of one of the progressive construction methods--outfitted-module construction--expressed by G. Shmal' provoked special interest. "The Main Directions for the Economic and Social Development of the USSR for the 11th and 12th Five-Year Plans" pointed to the need to disseminate it in every possible way. The essence of the method reduces down to combining under one roof box modules (with the equipment and technological support systems mounted) that have been manufactured at factories.

In essence, it is not the construction but the assembly of a facility that is taking place. The Sibkomplektmontazh Association--the only one in the country (of the construction associations) that functions under a two-level structure, which is subordinated directly to Minneftegazstroy--is engaged in this work. The method enables facilities to be turned over in turnkey style, with all the advantages that accrue from this. In 1981 the association is ready (considering the fact that the major portion of the operations are performed at the association's plants), along with the Administration for Trunk Oil Pipelines, to turn over one oil-pumping station turnkey style (not counting small construction projects--boilerhouses and others). Such a small scope is the result of a disordered structure of the management of construction. For example, a mobile installation column does 15 million rubles' worth of work. This is not within the capability of every trust. But its organizational structure and staff schedule are the same as for a mobile installation column with a work volume of 1 million rubles' worth. It does not have the rights of enterprises, and these must be expanded.

Ten years of experience in outfitted-module construction on Tyumen' ground indicates its indisputable advantages. Previously it took one administration 3-4 years to build an oil pumping station. Now one brigade of 50-60 people assembles one in 5-6 months. If Tyumen' had not used this construction method, today's indicators for the recovery of oil and gas could have proved to be unattainable.

The outfitted-module method has no opponents. Nor are there any followers, except Minneftegazstroy. Yet this method makes it possible to make a radical shift in the distribution of productive forces. Where desired, base plants can ship the modules to the required point. This is the mainline of industrialized construction. G. Shmal' considers that a specific integrated program for introducing the examined method into the national economy must be developed.

Its introduction, however, is being held back by inadequacies in supply. Existing standards documents, for example, state: 7 months prior to the start of the quarter the equipment should be at the association's plant. But today certain types of equipment whose deadlines for shipment were intended for last year still do not exist. The fault for failure lies with the client, who, incidentally, should determine the sequence of construction of facilities. Penalties for failure to meet deadlines for shipping equipment are ineffective. The fines obtained do not cover all the losses inflicted. In the opinion of G. Shmal', the client should get the loan from the bank, not the association. If he does not ship the equipment on time, then he is obligated to pay the bank increased interest. The situation that is being examined can be formulated this way: plans for shipping equipment are not in balance with the deadlines for introducing the facilities into operation.

The module method of construction can be used with great effectiveness if its advantages are linked up with a saving of materials. Questions arise: why do installations for the integrated treatment of gas [UKPG's] occupy large areas. Why is it that the compressors that are used do not weigh 8 tons, but 45 tons? Why does one have to deal with cumbersome pumps, motors and valves? Obviously, thought must be given to introducing new materials and technology for modular production. Right now the weight of the modules reaches 230 tons, and they can be manufactured even up to 500 tons and higher. Only the undeveloped state of transport systems makes their delivery difficult.

Outfitted-module construction is inseparably connected with qualitatively new forms for organizing production and planning. It is G. Shmal's position: integrated brigades must be given greater rights, and the plan should be oriented to the brigade. If a kindergarten is built at a budget-estimated cost of 500,000 rubles, then it is better to give it to the brigade, after stating the terms: the final settlement for wages will be made after turnover of the facility. However, no one is taking this step. It is prescribed that a report be made daily on what has been done with the orders. The defect of such a system is that it does not permit the introduction of full cost accounting in the brigade.

A. Paramonov, Chief of the Labor and Wages Division of Glavsibtruboprovodstroy, and A. Belanov (Tyumengazpromstroy [Trust for the Construction of Gas-Industry Enterprises in Tyumenskaya Oblast]) name other factors. The enormous benefit that the brigade contract brings is reduced, first because of the continuous transfer of people and equipment from one workplace to another (often over thousands of kilometers); second, because of a shortage of people. It is better that the brigade be integrated. There is no necessity to create, for example, a brigade of masons when large-scale construction that uses concrete panels and modules is going on.

Brigade leaders sometimes do not know the consumption norms for materials for, let's say, a kilometer of pipe laid. How many electrodes are burned up, for example, when one joint is welded--10, 15 or 20? Only experience permits compensation for a shortage of electrodes, which often are received broken and of low quality. If a portion of the materials is lost on the road, then the edge is taken off the workers' feeling for savings. Brigade members should know how much material is required to do the work. For the time being, they can only stay within the norms, but they do not save at all, based on them. Certain paragraphs of the statute about the brigade contract are out of date and need review. One of the characteristic subjects of the contract is a combining of trades and a greatly speeded up process of operations. In so doing, a welder, for example, in order to become a rigger, is counting on appropriate pay. Yet the Unified Wage Rates and Skills Handbook does not contain a wage rate for a welder-rigger. It contains no such (combined) specialty.

How is it best to introduce cost-accounting brigades into the technological flowline in order to turn pipelines over on time? Practice suggests the answer to the question. Transport subunits are elements in the industrial operations flow line. Brigades of drivers of single-axle trailers that carry welded pipelengths work by the piece, being paid under a job-contract-plus-bonus order for the amount of pipe hauled. The slingmen and pipelayer operators are paid for the time worked. This discrepancy causes great harm. The drivers "reduce" idle time by tossing the pipes into the snow. Then the builders have to sort them out, an interference with the deadlines for their work. The elimination of organizational noncoordination in this case lies in including loading and unloading teams in cost-accounting brigades.

The trade unions help to develop cost accounting in brigades. In the opinion of Tyumenskaya Oblast Trade-Union Committee Chairman P. Bol'sherotov, difficulties in introducing it (in addition to the difficulties noted) arise because there is no brigade-leaders' fund at its disposal. According to the statute, a fund for foremen is formed, but not for the brigade leaders, although their functions are just as great. Moreover, a brigade, on taking a job authorization, does not have statutes about standing orders, the work regime and so on, but the union organs for fire, sanitary-engineering, water-engineering and legal inspection and for technical inspection for the protection of labor keep an eye on this. One must suppose that the appropriate economic and legal organs are manifesting interest in this aspect of the question.

The use of the rotating-duty or the expeditionary method of work is a tradition for pipeline construction. The first one is effective when the distance between the rotating-duty settlement and the base is not very great, relatively speaking. It has been disseminated to advantage when oilfield support facilities are being built up. The second calls for the mobility of workers within a large region, or even between regions or outside the region. Their labor cycle is restricted by the periods for erecting the facility. The speakers noted the deficiencies and merits and spoke about the need to develop the expeditionary-rotating duty method, which combines the work practices of the one and the other.

G. Shmal' noted that this regime is now being fixed for workers: 20 days at the facility, 10 at home. The foreman and sector chief cannot work under such a regime. The engineers and technicians are at the construction site, separated from their families, for 280-320 days per year, since the staff schedule does not call for replacing them. What is more, the pay for rotating-duty personnel does not correspond to the physical and morale costs. In order to retain people, the pay in West Siberian regions must be improved.

V. Stanev expressed a similar thought: the regional coefficient for wages in Tyumenskaya Oblast is not always applied to take the natural and climatic conditions and production organization into account. If the pay mechanism were adjusted, it would be possible to acquire skilled personnel to work at the highly mechanized oil-pipeline structures (the degree of automation there reaches 90 percent).

Discussion of questions of using the expeditionary-rotating duty method disclosed an economic contradiction: despite the great benefit realized by the customer from the construction output, additional expenditures for the replacement and redeployment of equipment, the improvement of social and personal-services conditions, and the solution of other incidental problems rest on the shoulders of contracting organizations. As B. Trofimov noted, in the final analysis those costs are compensated for by gains on the national-economic scale. It is evident, at the same time, that the builders' losses should be reimbursed, particularly by including expenditures for business trips, increments for the migratory nature of the work, and so on in the budget estimates. It is important also to increase the incentive and regulatory role of pecuniary rewards.

It is basically youth that works on trunk pipeline construction. The average age of Surgut and Novyy Urengoy residents, for example, is 26-27 years. Sixteen All-Union shockwork Komsomol construction projects, including gas-pipeline construction projects, are operating in the oblast. The needs and concerns of the young people are constantly at the focus of attention of Komsomol organizations. Secretary of the Tyumenskaya Oblast Komsomol Committee A. Spirin and chief of the staff of the Komsomol Central Committee N. Rygalov spoke about this. They placed the main emphasis on the organization of the amenities and recreation for construction workers and their families. In particular, the oblast does not have enough Palaces of Culture and cinemas. In Tobol'sk, for example, the population is 60,000 and they have a theater, but Nizhnevartovsk, with 120,000 people, has no theater.

The supplying of such commodities as radio receivers, television sets and furniture is being handled unsatisfactorily. Facilities of the social infrastrcture--stores, schools, dormitories, and so on--are not always erected on time and in adequate numbers. It would seem that legal responsibility must be established for failure to introduce facilities for cultural and domestic-amenity purposes. Economic organs also could be authorized to acquire many articles by noncash transactions.

The lag in this field intensifies personnel turnover and poor quality in the selection of personnel. A definite portion of the workers leaves construction projects in a year. Every second worker transfers to another organization. About 80 percent of the arrivals do not have a specialty. Economic subunits are not paying attention to the acceptance of young families, which causes high internal migration. A. Spirin and N. Rygalov see the regularizaiton of pay and of awards for high labor indicators as ways to eliminate the enumerated deficiencies. Pay for equal work in different branches of industry also should be identical.

The development of vocational and technical education and of mentorship would help to reduce turnover. Under the supervision of a mentor, training would go on much more rapidly and much better than under fixed conditions, even in a brigade.

The speeches of the round-table participants clearly expressed the thought that the activity of managerial personnel is being evaluated not only on the basis of the results of the fulfillment of production plans but also on how well the constitutional statutes about improving working and safety conditions, providing for the vocational training of citizens and of a rise in their cultural level, and creating favorable opportunities for rest and rational use of free time, are being realized.

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In his speech at the close of the 26th CPSU Congress, L. I. Brezhnev expressed confidence that the creative charged induced by the congress would enrich the work of each collective, each rayon, oblast and republic, and the whole country. These words were also addressed to the workers of West Siberian regions.

In publishing the report of the journals that organized the round table, the editorial board expresses the hope that the questions of planning, setting norms for the consumption of material means, labor and wages, regulating the delivery of materials, introducing the achievements of science and technology into the practice of construction work, and other matters that were touched on will attract the attention of the appropriate economic organs, primarily the ministries. Effective measures should be worked out for improving the organization of construction work and of the working and living conditions of construction workers. This, in the final analysis, will help in the execution of large-scale tasks of developing the West Siberian oil and gas complex during the 11th Five-Year Plan.

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First Responses to Report

Moscow MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE in Russian No 11, 1981 pp 51-55

[Article: "Pipeline Construction: Expenditures and Results"]

> [Text] A round-table meeting organized by the editorial boards of the journals MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE, PLANOVOYE KHOZYAYSTVO, SOTSIALISTICHESKIY TRUD and KHOZYAYSTVO I PRAVO was held in the city of Tyumen'. The meeting's participants discussed questions about raising the utilization effectiveness of material and labor resources during the construction of trunk pipelines (No 6, 1981).
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> The editorial board has received answers from managers from a number of ministries.

Let Us Improve Work Methods

The Ministry of Oil Industry has reviewed the article, "The Rational Use of Material and Labor Resources in the Construction of Oil and Gas Pipelines." It touched on a large number of urgent problems of improving the economic mechanism and the planning and organization of production work and of construction, of making rational use of capital investment and material and labor resources, of expanding and improving industrialized methods of construction, particularly the outfitted-module method, of improving the quality of designs, and of unifying design solutions.

The most important ways to raise the efficiency of capital investment are to concentrate it, to reduce the number of construction projects, to guide the allocation of resources and, consequently, of material and labor resources, toward facilities that will provide for the planned level of recovery of oil, the utilization of casing-head gas, the delivery of crude oil to customers, and the performance of social tasks. The amount of capital investment in 1981 rose 38 percent over 1978. In so doing, the number of newly started facilities and of facilities being erected simultaneously was reduced. Uncompleted construction was cut during this period from 70.8 to 66.4 percent. It is planned to pursue this work constantly.

Much attention is being paid to improving the organization of design work and the quality of designs and to issuing documentation to contracting construction organizations on time.

With a view to unifying design solutions, standard series for oil-pumping stations on trunk oil pipelines, central points for gathering and treating oil, gas and water, and booster pump stations have been worked out jointly with Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises], with the direct participation of its design and design-development organizations.

Minneftegazstroy, Minnefteprom [Ministry of Petroleum Industry] and Mingazprom [Ministry of Gas Industry] have unified dimensioning systems for the production buildings of various oil and gas industry facilities. Design organization specialists of Minnefteprom and Minneftegazstroy have worked out a listing of outfitted-module installations that are needed for making up facilities for oilfield support and for the arterial transport of crude oil. This work will simplify the processes of designing and manufacturing outfitted-module installations and of building facilities.

A conference of design organizations and expert-review subunits of Minnefteprom was held in May 1981. The decisions of this conference, which were approved by the ministry, were aimed at raising the quality of development of design and budget-estimating papers. This is to be achieved by introducing into designs the newest scientific and technical achievements, progressive three-dimensional layout and design solutions, and the mechanization and automation of operating processes, by increasing capital investment effectiveness, and by making rational use of all types of resources in the operation of the facilities being designed and in the construction thereof.

The industrialization of construction on the basis of the use of outfitted-module installations is a basic Minnefteprom engineering policy. The beginning of this method was laid in the 1960's at oilfields of Tataria, Bashkiria and Kuybyshevskaya Oblast. The further improvement of this progressive method and the solution of a number of other questions that the participants of the round table meeting in the city of Tyumen' spoke about are especially important, given the modern volume of construction work. Minnefteprom is working on an expansion of the use of outfitted-module construction in close collaboration with Minneftegazstroy, and also with the machinebuilding ministries. The specific integrated program that the USSR State Committee on Science and Technology formulated must include the problem of developing outfitted-module construction. However, the committee has not adopted this Minnefteprom recommendation.

Supplying the facilities that produce outfitted-module installations with equipment, which the client sends, also requires improvement. Minnefteprom and Minneftegazstroy are working on the solution of this question. Molds that are acceptable to both the client and the contractor, which will be used to equip the enterprises that produce modules, are to be prepared. In this connection, it has now become necessary to note the USSR Gosstroy decision of 30 December 1976 to include the cost of manufacturing outfitted modules in the construction and installing work volume. Such installations must be viewed as industrial output and the costs for their manufactured included in the cost of the equipment.

Prices for outfitted modules also are in need of regularization. In 1975-1976 prices were set for experimental modules. It was proposed that these prices be revised during the mastery of mass production, but they remain in effect. These prices do not now reflect actual labor and material costs. In the opinion of specialists of Giprotyumenneftegaz [State Scientific-Research and Design Institute for the Oil and Gas Industry of Tyumenskaya Oblast] of Minnefteprom, they are overstated by 20-40 percent. As a result of this, the state loses from 5 to 10 million rubles annually. The costs of similar articles that are produced by Minnefteprom plants in Tyumen' average 25 percent less than those of articles manufactured by Minneftegazstroy enterprises. USSR Goskomtsen [State Committee for Prices] USSR Gosplan and USSR Gosstroy should work out a unified price-setting policy.

An important question is that of raising the quality of fabrication of the outfitted-module. For the acceleration of construction is not an end in itself. The facility that is being built must possess high technical reliability and durability and require a minimum of expense in operation.

Participants in the round-table meeting expressed an interesting suggestion about including a chapter on organization of the supplying of materials and equipment in designs for trunk pipelines. Such a chapter is also desirable in designs for oil-field support facilities. With a positive solution of this question by USSR Gosstroy, the erection of facilities for supplying construction projects with materials and equipment during the period of preparing for construction will be regularized.

The meeting's participants expressed a correct proposal about granting USSR Gossnab main territorial administrations the right to redistribute above-norm surpluses of equipment and materials that are on hand at enterprises, regardless of agency subordination. This responds fully to the problem of the rational use of material and equipment resources in light of the decisions of the 26th CPSU Congress.

The balancing of plans in regard to all indicators and all resources, both in production and in construction, is, unconditionally, the basis for the successful fulfillment of the prescribed tasks. Minnefteprom is taking persistent measures to solve this question during the period that annual plans are being formulated by USSR Gosplan, USSR Gossnab, the supplying ministries, and construction-ministry contractors.

However, despite the measures being applied, it still has not been possible to achieve a complete balancing of the plans. Thus, only the client ministry has to plan for the introduction of fixed capital in production-type construction and in housing. No such task has been set for the contracting construction ministries. This provokes great difficulties during the formulation of plans, especially during their realization. The situation is aggravated still more by the fact that Minneftegazstroy brings to its organizations tasks for introducing housing that differ from the plan indicators delivered to Minnefteprom by USSR Gosplan. Planning organs should be firmer in executing measures called for by the CPSU Central Committee and USSR Council of Ministers decree on improvement of the economic mechanism.

The Ministry of Petroleum Industry has repeatedly reviewed Minneftegazstroy's proposals to turn trunk oil pipelines over turnkey style. We consider that this form of operation is suitable for the erection of gas-treatment and repair plants, production bases, supply bases and central points for the gathering and treatment of oil, gas and water. Turnkey construction of trunk oil pipelines is unacceptable because all the construction and installing work directly on pipelines is concealed. Much of it is carried out with deviations from the engineering norms, and, even with constant surveillance by the client, it is not always possible to achieve the required quality. And with turnkey construction the client is eliminated entirely from the monitoring.

The round-table meeting participants noted the necessity for improving management of the development of oil recovery in West Siberia, for expanding use of the rotating-duty personnel method, and for improving the organization of production and construction.

In order to strengthen coordination in the work to increase oil and gas recovery and the construction of housing and of social and cultural facilities in West Siberia, in the preparation of documents, and in the implementation of a current-operations link with associations of Minnefteprom's central staff, a standing current-operations group of highly qualified specialists has been established. Production divisions for West Siberia have been included in the ministry's Administration for the Development of Equipment, Technology and Organization for the Recovery of Oil and Gas and for Drilling.

The amount of drilling work done by the expeditionary rotating-duty method in West Siberia will increase 2.6-fold in 1985 over 1980. For those who work under a rotating-duty regime, a summarizing settlement for worktime is being established. For governance of the time for rest and work and for the regularization of mutual relations among drilling organizations, a number of supervisory documents have been developed. However, there are no interindustry documents about organizing the rotating-duty personnel method. Minnefteprom considers that such documents should be worked out and approved in the nearest future.

USSR Gosplan, with the participation of ministries and agencies, including Minnefteprom, has prepared a draft of a document about the further development and improvement of the rotating-duty method of operation in various branches of industry and construction. It reflects a broad range of questions.

The Ministry of Petroleum Industry is working on wide propagation of the brigade contract in the construction of oil and gas wells. However, almost 90 percent of the drillers are working on brigade contracts in Glavtyumenneftegaz [Main Administration for the Recovery of Oil and Gas in Tyumenskaya Oblast], 82.4 percent of them in Komineft' Association, and all the drilling and construction brigades in Tatarneft' Association. This method is also being disseminated in the derrick-erecting brigades.

At a time of a shortage of labor resources in the West Siberian oil and gas complex, the role of centralized sources for providing enterprises with worker personnel is growing. It is becoming necessary to reassign youths, particularly graduates of vocational and technical schools who are stationed at the bases of oil-industry enterprises in other regions. However, the USSR State Committee on Vocational and Technical Education deviates from the ministry's recommendations to send PTU [vocational and technical school] graduates from other regions to West Siberian oil-industry enterprises.

In considering the importance of the West Siberian oil and gas complex, USSR Gosplan, USSR Goskomtrud [State Committee for Labor and Wages] and USSR Gosprofobr [State Committee for Vocational Education] should authorize West Siberian oil-industry enterprises to select and train workers in the training-center network of Minnefteprom enterprises that are located in other parts of the country. It is desirable that Union-republic councils of ministers require that 1981-1985 plans specify the necessary labor resources for this purpose, and also require that organs for the specialized employment placement of the populace extend assistance in the conduct of such work.

The appropriate Minnefteprom subunits have been charged with considering the recommendations expressed by participants of the round-table meeting in later practical work.

Sh. S. Dongaryan
Deputy Minister of the Oil Industry

Turn Gas Pipelines Over in Turnkey Fashion

The Ministry of Gas Industry has examined what was said by the round-table meeting participants in Tyumen'. This meeting discussed urgent questions of the rational use of material and labor resources in the construction of trunk oil and gas pipelines: the quality of planning, technical progress, improvement of the delivery of equipment and materials, the organization of work, and so on. The construction and introduction of gas industry facilities into operation and, in the final analysis, the fulfillment of the prescribed tasks for recovering and transporting gas, depend upon the precise solution of these questions by all participants in the investment process.

It must be noted that in 1980 Minneftegazstroy construction and installing organizations did not carry out the plan's tasks for introducing production capacity, housing and municipal and domestic-services facilities into operation. The situation has not been improved this year. Thus, during the first half of the year the plan for introducing fixed capital was carried out by only 36.5 percent. Introduced into operation were 58.4 percent of the gas pipelines, 24 percent of the compressor stations, 60 percent of the cable lines of communication, and 65.3 percent of the housing.

The Ministry of Gas Industry is taking measures to correct the situation. The number of new construction projects has been sharply reduced. Of the capital investment allocated, 91 percent of it was directed toward facilities that were carried over or those due for early startup. This helped to reduce the amount of uncompleted construction by 400 million rubles.

In developing progressive methods for building surface facilities, the ministry has taken a qualitatively new step--that of organizing deliveries of outfitted-module stations with a high degree of readiness and assembly built in at the factory. A single master supplier, whose functions have been vested in the Uzhgorod Experimental Gas-Transportation Installations Plant, is doing this work. A basic arrangement for the delivery of outfitted-module compressor stations has been reached with Minkhimmash [Ministry of Chemical and Petroleum Machine Building] and Minneftegazstroy. The stations will be manufactured on the basis of unified designs.

All this will increase the responsibility of the suppliers for the technical level, quality and reliability of the equipment, will enable the organization of construction work to be improved, will reduce installing-operations time at the construction site, and will speed up introduction of the facilities into operation.

The Ministry of Gas Industry has developed and sent to Minneftegazstroy for coordination a new proposal about the turnkey construction of gas industry facilities, which, together with the previous statute, which was approved 13 October 1980 by USSR Stroybank and coordinated with USSR Gosplan, USSR Gosstroy, USSR Minfin [Ministry of Finance] and USSR Gossnab, will enable conversion to the construction of facilities for the industry on the basis of this method. Its wide introduction will enable increased capital investment effectiveness and the motivation of prime contracting organizations to introduce gas industry facilities into operation to be raised.

The ministry has performed the necessary structural transformations. The Main Administration for the Construction of Gas Pipelines and the Administration for

Design Operations have been created. The functions of planning capital investment have been transferred to the Capital Construction Administration. This has enabled investment planning and the organization and monitoring of gas pipeline construction progress to be improved.

Work has been done to eliminate deficiencies in the activity of organizations that perform the functions of client. Measures have been taken jointly with the subcontracting ministries for the detailed outfitting of construction projects with equipment and the delivery thereof to storage on site, a strengthening of designers' surveillance, and improvement in the quality of startup and setting-up operations.

Questions of improving construction and outfitting with equipment and of bringing the most important gas pipeline systems to the designed regime have been examined jointly with Minneftegazstroy.

A. G. Gudz'
Deputy Minister of the Gas Industry

In Accordance with Specific Programs

The Ministry of Construction of Petroleum and Gas Industry Enterprises considers that the question of the rational use of material and labor resources during the construction of trunk pipelines that were adopted by the round-table participants have great significance for the industry. These problems were discussed at a party meeting of the ministry's communists and a session of the board.

"The Main Directions for the Economic and Social Development of the USSR During 1981-1985 and During the Period up to 1990" call for a boosting of gas recovery, primarily through the accelerated conquest of West Siberian fields. This task will be resolved on the basis of the wide use of the newest achievements of science and technology, the realization of industry and interindustry programs, the introduction of progressive methods for organizing the execution of construction and installing work, and the use of effective operating and engineering solutions throughout the entire construction cycle.

The ministry has developed and it is taking concrete measures to improve the construction of trunk oil and gas pipelines. Work has been done jointly with the Ministry of Gas Industry to choose the most rational routing of gas trunk pipelines. As a result, the question of building them in a single corridor was resolved. The basic principles for organizing the construction of a system of trunk pipelines with large operating flow-line groups, using the shuttle method, have been worked out. This will enable time lost during redeploying from facility to facility to be precluded, preparatory operations to be carried out on time, and integrated housing settlements for the builders of compressor stations and of linear facilities to be created.

The USSR Academy of Sciences has been designated the prime scientific center for problems of the development of pipeline transport. The Presidium of the AN SSSR [USSR Academy of Sciences] has reviewed questions of oil and gas industry construction and the participation of fundamental science in their solution. Deadlines for the execution of measures for improving the techology of erecting trunk pipelines that have been charged to scientific and design organizations of other ministries and agencies have been coordinated with the USSR State Committee for Science and Technology.

As a result of the use of the outfitted-module method of construction during the last 5 years, labor productivity has been increased 23 percent, and the average time spent erecting compressor stations has been reduced from 17.5 to 12.5 months. This year more than 63 percent of the work on building compressor pump stations, installations for the integrated treatment of gas and oil, and other facilities for the oil and gas industry will be carried out by this progressive method. In the next few years it will be further developed.

The ministry is taking measures to improve the economic activity. An industry program for improving the system for delivering pipe and for using it is being developed. Personal responsibility for the rational consumption of pipe, materials and equipment have been vested in the managers of construction and installing organizations. Measures have been developed for the economical consumption of electrical and thermal energy and for suppressing cases of poor management and wastefulness.

The industry's organizations and enterprises have adopted a commitment to save this year 11,000 tons of rolled metal, 25,000 tons of cement, 7,200 tons of standard fuel equivalent, and 20 million kw-hr of electricity.

The ministry has developed a master scheme for controlling the construction of enterprises of the oil and gas industry. The main measures specified by this scheme are already being realized. This will permit a systematic rise in the pace of erecting trunk pipelines and of support facilities for oil and gas fields and the integrated construction of cities and settlements in West Siberia to be provided for.

The industry has taken a number of steps to improve the organization of and the pay for labor. Use of the brigade contract has grown in scale. One-third of the overall volume of construction and installing work is done by this progressive method. Introduction of the brigade contract has helped to raise the effectiveness of construction and reduce the time taken to erect the most important oil and gas facilities. A specific program for the development and improvement of the brigade contract in Minneftegazstroy organizations during 1981-1985 has been approved, jointly with the Central Committee of the Trade Union of Oil and Gas Industry Workers. This year 40 percent of all work will be done by this method.

Yu. P. Batalin
First Deputy Minister of the Construction
of Petroleum and Gas Industry Enterprises

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More Responses to Report

Moscow MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE in Russian No 12, 1981 pp 60-63

[Article: "The Construction of Pipelines: Expenditures and Results"]

> [Text] A round-table meeting organized by the editorial boards of the journals MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE, PLANOVOYE KHOZYAYSTVO, SOTSIALISTICHESKIY TRUD and KHOZYAYSTVO I PRAVO was held in the city of Tyumen'. The meeting's participants discussed questions about raising the utilization effectiveness of material and labor resources during the construction of trunk pipelines (No 6, 1981).
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> The conversation that began at the round table was continued by ministry workers (No 11, 1981). They noted the importance of the questions raised and reported about measures taken.
>
> Today discussion of the problems of the rational use of material and financial resources during trunk pipeline construction continues.

In Accordance with Rational Schemes

Soyuzglavtrubsnabsbyt [Main Administration for the Supply and Marketing of Pipe] has reviewed the papers of the round-table meeting. Its participants raised and discussed urgent questions about the rational use of material and labor resources during the construction of trunk oil and gas pipelines. We consider the remarks of the journals to be extremely timely.

Guided by the decisions of higher authority about the need to save and make rational use of material resources, Soyuzglavtrubsbyt is taking steps, jointly with USSR Gosplan and the ministries, to provide for the effective consumption of pipe in construction. Each year recommendations about the additional output of scarce and economical types of pipe are worked out for coordination in the annual plans of the amounts of production with the mix of the requirements. An analysis is being made of the filling of orders for pipe that is used to build oil and gas pipelines, taking the diameters and wall thicknesses into account. Measures to improve the supplying of customers with pipe of the required parameters are being developed and will be executed during work on five-year plans and annual plans. The load on productive capacity is being studied systematically, and recommendations for the specialization of pipe-rolling mills and departments are being introduced.

Thus the structure of production is systematically adjusted in accordance with the national economy's requirements. At the same time, it should be noted that cases are still occurring of the irrational production and consumption of pipe and the output of articles of increased metals intensiveness. According to an assessment by Soyuzglavtrubsnabsbyt, the execution of measures to reduce the metals intensiveness of pipe (a reduction of wall thickness, with the retention of strength characteristics) will enable as much as 5 percent of the metal to be saved during the five-year plan without reducing the length of the pipelines.

USSR Gosplan, USSR Gossnab and USSR Minchermet [Ministry of Ferrous Metallurgy] have worked out specific recommendations for increasing the output of pipe for trunk oil and gas pipelines. In particular, it is planned to develop additional capacity for producing 1,220 and and 1420 mm diameter pipe, which is designed for working pressures of 75 and 100 atmospheres, by rebuilding existing mills and constructing new ones.

A recommendation developed by USSR Minchermet that new production facilities be built in the Tyumen' area deserves attention. Realization of the planned measures will enable capacity for the manufacture of pipe for all categories of pipelines to be established during the next five-year plan.

An important prerequisite for carrying out plans for the construction and introduction of trunk pipelines is correlation of the construction process with the dates for the delivery of the pipe. In recent years pipe deliveries have been greatly improved in regard to both volume and deadlines. Basically, all the facilities being built were provided with these articles on time. At the same time, it must be noted that these were supplied to construction organizations with great difficulty. This was caused mainly by delays in delivering the pipe to the place of erection.

In our opinion, USSR Gossnab and the transportation ministries, jointly with the construction ministries, must develop and introduce more rational schemes for shipping pipe and other materials used in building oil and gas pipelines. During the preparation of such schemes, all possible modes of delivery--by river ports of the Irtysh and West Siberian Shipping Lines, the Northern Sea Route to Ob'skaya Gulf, and hauling over the Surgut-Urengoy Railroad, which is under construction, should be used. This will enable round-the-year rhythmic shipment of pipe and other materials to the builders.

The construction of mechanized bases and warehouses for the USSR Gossnab system and the ministries should be intensified, with a view to using this capacity for creating the necessary reserves of materials of which there are severe shortages.

N. Zelentsov
Chief of Soyuzglavtrubsnabsbyt

Specific Provisioning for the Most Important Facilities

The problems of use of material resources during the construction of trunk oil and gas pipelines that were raised by the round-table participants require attentive study by all USSR Gossnab organs.

Most of the speakers noted the importance of the correct planning and management of construction work, the engineering preparation therefor, and improvement of the system of supplying materials and equipment. The recommendations on use of progressive methods of outfitted-module construction deserve the special attention of client and contracting ministries. This will help in every possible way to save and make rational use of the resources allocated and to reduce uncompleted construction and surpluses of prefabricated reinforced-concrete structure, which leads to a freezing of materials and reserves.

USSR Gossnab is concentrating material resources at the most important construction projects and facilities due for early startup, including those in West Siberia. For this purpose, the ministries' practice of specifically allocating resources in accordance with designs and budget estimates and the USSR Gossnab organs' practice of supplying the resources to construction projects in the required amounts within the agreed periods, has justified itself and is being expanded. Special attention is being paid to the supplying of materials and equipment to the most important facilities for 1981.

Systematic monitoring over progress in shipments has been established. This is being done by current-operations groups which have been created in the USSR Gossnab central apparatus and territorial organs and are, jointly with construction ministries and organizations, providing for the routing of the supplies and equipment that are received, primarily to construction of the most important enterprises of the trunk oil and gas pipelines and of facilities for housing, cultural and domestic-services purposes.

E. Orzhekhovskiy,
Chief of USSR Gossnab's Administration for
the Supply and Rational Use of Material
Resources in Construction.

For Development of the Gas Complex

The Administration for the Supply and Rational Use of Ferrous Metals of USSR Gossnab considers that the participants of the round-table meeting raised important questions. There is great significance, in particular, in the expansion of warehouse space and the creation outside the agency of reserves of materials for the construction of the West Siberian oil and gas complex. The capacity of Tyumen' Main Regional Administration specialized enterprises for delivering metal products is clearly inadequate at present.

In considering the long term in the further development of West Siberia's oil and gas recovery, USSR Gossnab plans to greatly expand the warehouse method for supplying the region's customers. During the 11th Five-Year Plan the design capacity of existing enterprises for delivering metal products is to be increased by 130,000 tons by rebuilding. Moreover, the construction of new enterprises for making deliveries to Surgut and Tobol'sk is planned.

The participants of the meeting in Tyumen' subjected the organization of monitoring deliveries of steel pipe to justified criticism. USSR Gossnab organs are taking measures to improve this work. Monitoring the delivery of steel pipe to West Siberia, especially pipe for oil pipelines that is shipped to remote parts of the region, has been strengthened. In order to further improve monitoring of the West Siberia oil and gas complex, beginning in 1981 resources are being allocated and deliveries are being formulated individually in accordance with the figures established by the fund managers.

The main customers for metal products, including steel pipe, are organizations and enterprises of Mingazprom [Ministry of Gas Industry], Minnefteprom [Ministry of Petroleum Industry], Mingeo [Ministry of Geology] and Minneftegazstroy [Ministry fo Construction of Petroleum and Gas Industry Enterprises]. The requirement for pipe for building oil pipelines is set in accordance with the physical amounts of the operations. The deadlines for delivery are established by Minneftegazstroy, depending upon the conditions for delivery to the regions of construction, the date of introduction of the pipeline into operation, and the amounts of financing.

The meeting's participants expressed a correct thought about the need to develop standards documents for construction under permafrost conditions. The use of such documents will help to improve the use of resources in the Far North environment.

The effectiveness of use of gas pipeline route members of increased capacity was mentioned at the round table. Right now the production of clad pipe, which is designed for pressures of 100 atmospheres and higher, is being mastered by the Vyksa Metallurgical Plant and the Khartsyzsk Pipe Plant.

L. Spivakovskiy
Acting Chief of USSR Gossnab's Administration for the Supply and Rational Use of Ferrous Metals

Guaranteed by Legal Norms

Urgent questions connected with improving the use of materials and labor resources during the construction of trunk pipelines were raised at the round-table meeting in Tyumen'. In particular, recommendations were made about the need to improve the legal bases that regulate the interrelationships of clients, contractors, the organs that supply materials and equipment, and other construction participants.

At present a number of standard enactments have been adopted that are aimed at strengthening plan and contract discipline and at raising the effectiveness of the consumption of resources in the national economy. In particular, new statutes about deliveries of output for production-equipment purposes and of consumer goods and documents about the procedure for selling above-norm and unused material valuables have been approved. These standard enactments set concrete measures that are aimed at strengthening the savings regime and reducing losses during production and transport and in the services sphere, and at increasing economic penalties for the use of overstated norms, for the overconsumption of resources, and for the development, manufacture, selling and storage of output in violation of the standards and specifications. Moreover, the rights of USSR Gossnab organs to involve above-norm and unused material reserves in the economic turnover have been expanded.

These standard enactments have solved a number of questions that were posed by participants of the round table. For example, a recommendation was made about granting USSR Gossnab organs the right to redistribute above-norm surpluses of material resources that had been formed at enterprises and organizations. Under a new procedure, in case of refusal of a superior organ to redistribute above-norm or unused material valuables, enterprises, associations, organizations and institutions are obligated to notify USSR Gossnab organs by the established dates about the availability of these valuables for involvement in economic circulation.

The right of USSR Gossnab organs to issue orders to enterprises, organizations and institutions that have above-norm or unused material valuable to ship the appropriate types of products and commodities, and, in the established procedure, to change deadlines and to reduce the amount of products supplied to customers, taking their corresponding above-norm or unused material valuables into account, has been strengthened.

At the round-table meeting the question was posed of intensifying pecuniary responsibility for violating the rules for preserving products and of making more rigorous the procedure for reimbursement for harm that has been caused. In accordance with the CPSU Central Committee and USSR Council of Ministers decree about an intensification of economic penalties, Gosstandart [State Committee for Standards], USSR State Committee on Science and Technology, USSR Minfin [Ministry of Finance], USSR TsSU [Central Statistical Administration] and USSR Goskomtsen [State Committee for Prices] are now developing a draft of a decree about strengthening economic penalties for designing, manufacturing, selling and preserving products in violation of the standards and specifications.

The round-table participants expressed the opinion that penalties for failure to meet deadlines for delivering equipment are ineffective. The fines do not cover the losses caused. In accordance with the statute about delivering products for production-equipment purposes, which was approved by a USSR Council of Ministers decree of 10 February 1981, the party that violates a contract will not only pay a penalty but will also reimburse the other party for the losses that the violation inflicted, to the extent not covered by the penalty. The tasks consists in getting enterprises to use more actively their rights to exact the penalties. At the same time, USSR State Arbitration organs should pay greater attention to this question, based upon the need to mandatorily exact losses from the party that has violated contractual commitments.

The new instructions on the procedure for computing the fulfillment of tasks and commitments for delivering products and commodities in accordance with agreements that have been concluded when evaluating the activity and economic incentives for production, supply-and-marketing, and trade associations, enterprises and organizations that were approved by USSR Gosplan, USSR Gossnab, USSR Goskomtrud [State Committee for Labor and Wages], USSR Minfin, USSR TsSU and the AUCCTU on 24 August 1981 will serve the purpose of reinforcing contract discipline.

Beginning 1 January 1982 a new procedure is being introduced for evaluating the activity of enterprises and organizations that supply materials and equipment. In this case, the requirements for strict fulfillment of contractual commitments are greatly raised for the awarding of bonuses, the forming of material incentive funds, and the summing up of the results of All-Union and republic socialist competition.

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FUELS

STATUS OF PLANS FOR PIPELINE CONSTRUCTION SURVEYED

Moscow EKONOMICHESKAYA GAZETA in Russian No 43, Oct 81 p 2

[Article: "The Development of Pipeline Transport"]

[Text] The development of pipeline transport is playing an important role in strengthening the country's fuel and power complex, its importance growing increasingly as new oil and gas fields that are distant from the principal consumers are put under development.

Trunk pipelines are a most economical type of transport. Thus they deliver crude oil and petroleum product two or three times as rapidly as the railroads and with fewer losses, the supply is more reliable and flexible, and technical sophistication at enterprises that consume gas and petroleum product is higher.

In the last 10 years the share of pipelines in the total volume of material transported rose from 10.3 to 26.8 percent, and it continues to increase. It should reach 30.8 percent in 1985. More than two-thirds of the fuel (converted to standard fuel equivalents) extracted in the country is now pumped over pipelines. The total length of these arterials for oil and gas is more than 200,000 km.

Organizations of the Ministry for the Construction of Petroleum and Gas Industry Enterprises do the basic work of erecting trunk lines. The successes of Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] builders were noted in Comrade L. I. Brezhnev's greetings on the occasion of their fulfillment of 10th Five-Year Plan tasks ahead of schedule.

The Largest Gas Pipeline System

The 11th Five-Year Plan calls for the construction and introduction into operation of six trunk gas pipelines that will run from northern parts of Tyumenskaya Oblast to the European portion of the country and will total 20,000 km in length. The gas will travel over pipelines 1,420 mm in diameter under a pressure of 75 atmospheres. Moreover, more than 5,000 km of the most important distribution pipelines and more than 1,000 km of other gas pipelines must be laid and 232 compressor stations must be built. Simultaneously, much work must be done on gas pipeline projects that are under way and are to be put into operation during the 12th Five-Year Plan.

A system of gas pipelines unprecedented in scale is being laid down at an unprecedented pace on the land of 27 oblasts and autonomous republics of the Russian

Federation, the Ukraine and Belorussia. Especially large amounts of work are to be done in Tyumenskaya, Sverdlovskaya, Permskaya and Kuybyshevskaya oblasts and in Bashkiria.

Never before have the builders of the underground arterials had to solve such huge problems. During this five-year plan the construction of 1,420-mm diameter gas pipeline will double. And, what is more, the gas distribution pipelines will be large arterials, mainly 1,220 mm in diameter.

Other agencies have been called upon to solve tasks that are important in building the gas-pipeline system. During this five-year plan USSR Mintyazhmash [Ministry of Heavy and Transport Machine Building] and USSR Minpromstroy [Ministry of Industrial Construction] are to build 19 compressor stations each, USSR Minstroy [Ministry of Construction] 17 and USSR Minenergo [Ministry of Power and Electrification] 14. Some of the compressor stations must be put into operation in April and June of 1982. Large amounts of work will fall on USSR Minmontazhspetsstroy [Ministry of Installation and Special Construction Work] and USSR Minsvyaz' [Ministry of Communications] under subcontracting agreements. USSR Minenergo organizations should provide for the construction by the established deadlines of new electric-power lines and substations and an expansion or reconstruction of existing ones for the new underground trunk lines.

Success of the whole affair depends greatly upon the client--Mingazprom [Ministry of Gas Industry] and its design organizations. It is important that the design solutions call for a maximum of unification of both the operating equipment and the constructional structure. Certain types of units must be made standard for the compressor stations. USSR Gosstroy must show great exactingness and activeness in this question. All the standard solutions for compressor stations on the gas-pipeline system must be examined and approved by the end of this year. This work will also aid in the erection in Central Asia of the Sovetabad-Khiva and Khiva-Beyneu gas pipelines, which will total more than 1,000 km in length, during the 11th Five-Year Plan.

The Oil Rivers Will Be Filled Up

Pipeline transport of crude and petroleum product will be further developed during the 11th Five-Year Plan. Oil pipelines have now reached a total length of about 70,000 km, having grown 1.9-fold since 1970. It is planned to introduce 10,000 km of trunk oil pipelines, about 100 pump stations and 3.88 million cubic meters of oil-storage tank capacity in 1981-1985.

The execution of this program will enable the amounts of oil pumped to be brought up to 602-605 million tons by the end of the five-year plan. As a result, rail transporting of oil should be reduced by 7-10 million tons below the 1980 level. During this five-year plan, along with bringing the Surgut-Polotsk oil pipeline, which went into operation in 1981, up to design capacity, the new Urengoy-Kholmogory-Surgut-Perm'-Kuybyshev, Pavlodar-Chimkent-Chardzhou, Perm'-Al'met'yevsk, Groznyy-Baku, Prorva-Gur'yev and Kenkiyak-Orsk trunk pipelines will be laid.

A major strenuous program to develop petroleum-product pipelines is planned for the 11th Five-Year Plan. More than 6,500 km of such large trunk pipelines, about 900,000 m^3 of tank capacity and 15 pump stations are to be put into operation. This will enable the light petroleum product pumped in 1985 to increase by

30 percent over the 1980 figure; and it will give relief to more heavily loaded sections of the railroad. The most important arterials follow the Novki-Ryazan'-Tula-Orel, Nikol'skoye-Voronezh-Belgorod-Khar'kov, Orel-Kursk and Sineglazovo-Sverdlovsk routes.

Experience in building pipeline transport for oil and gas have become a good foundation for the development of a system for the hydraulic transport of solid materials. A Belovo-Novosibirsk coal pipeline is now being designed; it will be 250 km long and its throughput will be 4.3 million tons per year. A feasibility study for a Krivoy Rog-Donbass [Donets Coal Basin] pipeline 370 km long for transporting 14 million tons of iron ore concentrate per year has been completed. Minneftegazstroy scientific-research organizations are performing research and design-development, jointly with institutes of other ministries, on the creation of a coal pipeline from the Kuzbass [Kuznetsk Coal Basin] to power stations in the Urals, Volga and Central Economic Regions. Designs for pneumatic container systems, conveyor trains and pipeline container flow lines are being developed.

At a High Technical Level

Soviet scientists and design developers have created highly developed domestic equipment for erecting trunk pipelines. The serial production of more than 70 new machines and mechanisms has already started. Among them are high-powered rotary excavators with a productivity of 1,200 m^3/hr that can dig a ditch in frozen soil, heavy pipelayers with a load capacity of 50 tons, earthmovers with a productivity of up to 300 m^3/hr, and Tyumen' type swamp travelers with a load capacity of 30 tons.

Radical changes have occurred in the welding of pipelines. Today, half of the joints of trunk pipelines are welded by automatic equipment. The Institute of Electrical Welding imeni Ye. O. Paton of the UkSSR Academy of Sciences, in collaboration with Minneftegazstroy design-development and production organizations, have created a special complex for automatic contact welding of large-diameter pipe for Sever-1.

The industrialized outfitted-module method of construction, which permits the time for introducing a facility to be cut in half, has been widely disseminated during the erection of pump and compressor stations. The amount of work done this way grew 3.4-fold during the five-year plan. By the end of the 11th Five-Year Plan all surface facilities for the oil and gas industries are to be erected by this method.

Major tasks in preparation for the construction of a new class of pipelines that are designed for a pressure of 100-120 atmospheres, the laying of trunk pipelines in permafrost soils and on the swampy tunda, the use of clad pipe, and organization of the transport of cooled and liquefied gas and of highly viscous crude that has been heated remain to be solved by scientific-research, design-development and production organizations. Pipe with factory-installed insulation can have a great effect on speeding up the pace of pipeline construction, raising its quality and reducing its labor intensiveness. Minneftetazstroy has already gained experience in this area, and an appropriate technical base has been established. Solution of this important problem will depend greatly upon the work of enterprises of USSR Minchermet [Ministry of Ferrous Metallurgy]--manufacturers of the pipe--and Minkhimprom [Ministry of Chemical Industry]--supplier of the insulating material.

An important task of builders and clients is that of insuring integration in the turnover of facilities. A lag in the construction of compressor and pump stations, electric-power facilities, facilities for communication and electrochemical protection, reserve strands for crossing water obstacles, housing, and facilities for cultural and everyday-living purposes reduces the utilization effectiveness of trunk pipelines and causes difficulties in recruiting and retaining personnel.

At the Start of the Five-Year Plan

The pipeline builders have made a good start during the 11th Five-Year Plan. Since the start of this year, new gas-transporting systems that total 3,400 km in length and oil pipelines that total 1,300 km, as well as the Yuzhnyy-Balik-Tobol'sk product pipeline, have gone into operation.

Erection of the linear portion of the Urengoy-Gryazovets-Moscow Oblast Gas Ring gas pipeline was completed this year. This is the firstling of a new system of gas pipelines called for by the 11th Five-Year Plan. Work on its compressor stations is being completed. Welding, insulating and earthmoving work are going on full blast for the erection of a second gas pipeline of said Urengoy-Petrovsk system that totals more than 2,700 km in length. The task calls for the introduction into operation this year of 1,273 km of the trunk line, the rest of it in the second half of 1982. However, advanced collectives of Minneftegazstroy have widely promoted socialist competition and have committed themselves to putting into operation in 1981, ahead of time, the whole Urengoy-Petrovsk gas pipeline. By the start of October, more than 2,000 km of pipe had been welded into a strand on this gas pipeline and more than 1,700 km of it had been insulated. The work pace is building up.

At the same time, internal reserves for raising production effectiveness and work quality are not being used fully yet in the work of organizations and enterprises. In some units, performance discipline is not up to par. As a result, a number of important items of capacity for the national economy that were called for by the plan for January-September of this year have not been introduced. The task for the first 9 months of the year have not been carried out in regard to construction commodity output. Glavtruboprovodstroy [Main Administration for Pipeline Construction] and Soyuzgazpromstroy have been especially remiss.

A lag in the erection of trunk gas pipeline underwater crossings (Soyuzpodvodtruboprovodstroy Association) and of electric-power lines and facilities for electrochemical protection of pipelines (Glavneftegazelektrospetsstroy) has been noted. Many trusts are slowly restructuring their activity for the improvement of economic work and for the economical use of all types of resources. These deficiencies can and should be eliminated as quickly as possible.

The experience gained by the trunk oil and gas pipeline builders, the high degree to which they are equipped operationally, and the concern accorded them are a pledge of successful fulfillment of the party's designs for developing pipeline transport during the 11th Five-Year Plan.

11409
CSO: 1822/60

CONSTRUCTION OF URENGOY-PETROVSK PIPELINE DETAILED

Progress as of 4 November

Moscow STROITEL'NAYA GAZETA in Russian 4 Nov 81 p 1

[Letter, project schedule, and comment by G. Sudobin, deputy minister of construction of petroleum and gas industry enterprises: "A Telegram to the Ministry of Construction of Petroleum and Gas Industry Enterprise, Moscow"]

[Text] To the Minister:

In June 1981 our comprehensive production line adopted stepped-up socialist obligations — to construct the 100-kilometer segment of the Urengoy-Petrovsk gas pipeline assigned to us by the 64th anniversary of Great October instead of the second quarter of 1982 as envisioned by the plan — and called on all construction workers employed here to accelerate the launching of this very important project for the energy fuel sector.

The collective has kept its word: our segment of the pipeline was completed on 27 October, which was 10 days earlier than stated in the obligations.

This is our gift of labor to the celebration of Great October.

On behalf of the collective of construction workers — I. Shaykhutdinov, line chief, and V. Nikulina, party group organizer

Record of the Shock Construction Project (Progress as of 4 November, in kilometers)

	Total Assignment	Top Welding		Insulation Laying	
		Done	Remaining	Done	Remaining
Glavsibtruboprovodstroy	854	524	330	464	390
Glavvostoktruboprovodstroy	1, 115	1,000	115	940	175
Glavtruboprovodstroy	462	462	-	426	36

[Continued next page]

	Total Assignment	Top Welding		Insulation Laying	
		Done	Remaining	Done	Remaining
Soyuzintergazstroy	101	101	-	101	-
Glavukrneftegazstroy	194	194	-	190	4
Ministry of Gas Industry	5	The crossings over the Volga reservoir are completed			
Total	2,731	2,286	445	2,126	605

G. Sudobin, deputy minister of construction of the petroleum and gas industry enterprises, comments on the above report:

We at the ministry expected that if the collective of I. Shaykhutdinov's line gave its word, it would certainly keep it. And now, as we see from the telegram, the initiators of competition in construction of the Urengoy-Petrovsk gas pipeline have cut even more time off the schedule.

The practices of this collective will be carefully studied and disseminated. Now for a word about construction of the pipeline in general. Let me recall that according to the original plan 1,273 kilometers of pipeline was to be put into use this year. Considering the enormous significance of this project for the energy fuel industry, the labor collective of the ministry took on obligations to complete the entire line this year, that is 2,731 kilometers.

The bulk of the incomplete work belongs to the Siberian subdivisions. All the line teams of Glavsibtruboprovodstroy [Main Administration for Pipeline Construction in Siberian Regions] are already concentrated on the starting lines. The temperatures are reaching 20 below. In the very near future the Siberian workers can and must increase the pace of pipeline insulation and laying to at least 10 kilometers a day in order to complete the work by mid-December.

The chief task of the other main administration, Glavvostoktrubroprovodstroy [Main Administration for Pipeline Construction in Far Eastern Regions], is to direct personnel who have been freed by completion of certain segments to help collectives that are behind in the three trusts Nefteprovodmontazh [Petroleum Pipeline Installation], Omsktruboprovodstroy [Omsk Pipeline Construction], and Uralneftegazstroy [Ural Petroleum and Gas Construction]. Moreover, they must teach them how to organize work on the line and how to synchronize performance of the jobs of hauling up the pipe, welding, digging trenches, and the like.

But already by the first 10 days of November Glavtruboprovodstroy [Main Administration of Pipeline Construction] and Glavukrneftegazstroy [Main Administration for Construction of Petroleum and Gas Enterprises in the Ukraine] need to complete all line work and turn over the gas pipeline for operation within the month, completing the certificate of its acceptance by the state commission.

The workers who are building the underwater crossings still have a good deal of work to do and are behind schedule in some places. More than half of the power transmission lines along the pipeline route have not been built, which may delay the installation of electrochemical protection.

Unfortunately, everything does not depend on the construction workers. Equipment and connecting parts have still not been delivered to many sections which are ready for testing, and without them the pipeline cannot be put on line. We urgently request the management of the Ministry of Gas Industry and its associations to provide supplies to our common construction project more promptly.

Completion Announced

Moscow IZVESTIYA in Russian 31 Dec 81, p 1

[Article by M. Malakhova and Yu. Perepletkin: "The Pipeline Is Laid"]

[Text] The workers of the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises have completed line work on the largest energy fuel construction project of the five-year plan, the gas pipeline from Urengoy through Nizhnyaya Tura to Petrovsk. The two "red" final connections were completed in the northern and southern arms of the route, near Nadym and Ufa. The underground road for West Siberian gas is laid over its full distance of 2,730 kilometers.

Among the leaders in competition who were given the lofty honor of doing the final work were B. Diduk, a welder from the Severtruboprovodstroy [Northern Pipeline Construction] Trust who has won the State Prize, F. Mukhamediyarov, steel seam foreman, V. Madenov and N. Nazmiyev, managers of insulation and laying columns, and V. Grichishkin, driver of a heavy-duty pipe truck.

So, thanks to innovative work it was possible to save almost six months over scheduled time at one of the important projects of the five-year plan. Leaders in competition at the projects to build the Urengoy-Novopskov and Urengoy-Uzhgorod gas pipelines have taken on similar obligations. Many subdivisions of Glavtruboprovodstroy, Glavvostoktruboprovodstroy, and Glavsibtruboprovodstroy on the Novopskov line, for example, have decided to complete line work in their sectors several months ahead of schedule, by the 112th anniversary of the birth of Vladimir Il'ich Lenin.

11,176
CSO: 1829/114

OFFSHORE PLATFORM 'SHEL'F' BEGINS WORK IN CASPIAN

Moscow NEDELYA in Russian No 47, 16-22 Nov 81 p 6

[Article by A. Trutnev (USSR Ministry of Gas Industry Press Center correspondent): "'Shel'f-1' Goes to Sea"]

> [Text] "Take steps to find oil and gas deposits...on the continental shelf," state the "Main Directions."

According to the scientists' forecasts, offshore storehouses will supply a substantial share of the oil recovered in the foreseeable future. The problem of developing mineral resourcess offshore thus is of major national economic significance: our country has at its disposal the world's longest continental shelf. According to preliminary prognoses, many areas of our country's continental shelf are promising for prospecting for oil and gas. It is planned to provide for growth in oil recovery in offshore areas in the near future by intensifying work in the Caspian and Okhotsk Seas.

Special drill rigs are needed for prospecting in shelf zones. Several types of integral floating facilities have been developed. One of the most promising is the semisubmersible floating drill rig (PPBU), which can drill at sea depths of 170-200 meters (and specialists have proved that the main fuel reserves are concentrated at sea depths of more than 100 meters).

At first semisubmersible platforms were designed and built for restricted areas of operation that were characterized by relatively favorable weather. But development of the shelves of Sakhalin and certain regions of the Caspian have led to the development of a PPBU which is suitable for operation also in a more severe climate.

And so a prototype of a new type of drill rig has been built: "Shel'f-1." It incorporates 2 pontoons, 6 stabilizing columns and a superstructure with quarters and premises for services and operations. The purpose of this PPBU is to drill exploratory wells for oil and gas up to 6,000 meters deep where the water is 70-200 meters deep. The rig is able to continue drilling even when the sea state is rather rough and to make a trip behind a tug (and this expands the area of possible drilling operations). Taking full reserves aboard enables the PPBU to conduct self-contained operations for a month.

This floating plant is interesting because of many design features. One of them is the system of anchor positioning for maintaining the rig over the well being drilled. And now the prototype floating semisubmersible drill rig "Shel'f-1" has begun to operate in the Caspian.

11409
CSO: 1822/60

FUELS

BETTER SUPPORT FOR OIL EXPLORATION IN AZERBAIJAN URGED

Baku VYSHKA in Russian 15 Dec 81 p 1

[Editorial: "Exploring for Oil Is a Shockwork Front"]

[Text] In speaking to the November 1981 CPSU Central Committee Plenum, Comrade L. I. Brezhnev paid great attention to the development of the fuel and power complex as one of the decisive parts of the five-year plan. The more electricity the country generates and the more oil and gas it recovers, the more successfully will the tasks for a further upsurge of the economy and for improvement of the people's welfare be solved.

In executing this program, which was called for by the 26th CPSU Congress, Azerbaijan's oilfield workers, who have at their disposal great potential reserves and opportunities not only for stabilizing oil and gas recovery but also for supporting an increase thereof, can and should make their contribution. Suffice it to say that during the Ninth and 10th Five-Year Plans, 42 new fields and deposits of hydrocarbon raw materials were discovered in the republic, and a substantial growth of the reserves thereof was achieved.

The industry's equipment provisioning is being improved. Especially appreciable changes are occurring in offshore oil recovery and drilling. The modern floating and submersible drill rigs and other progressive technical means that are entering the Caspian oilfield workers' armory are paving the way for mastering great sea depths.

It is the paramount duty of Azerbaijan's oilfield workers to use the existing potential more completely, to bring all the reserves for intensifying recovery and drilling into operation, and to overfulfill 11th Five-Year Plan tasks.

We still have many examples of excellent work by oil-and-gas explorers. Many brigades of the Primorskiy Offshore Exploratory Drilling Administration, which fulfilled its annual plan back in November, are penetrating superdeep wells from various foundations at high speeds in the Baku Archipelago's complicated environment. Six brigades of the Gobustan UBR [Drilling Administration] coped with the annual task by a substantial margin. Among them we see the brigade of foreman A. Samedov and N. Bayramov--one of the discoverers of the Zardob oil and gas field in central Azerbaijan. The brigade of the celebrated oil explorer, Hero of Socialist Labor S. Nagiyev, is toiling with high productivity. It is surpassing the planned drilling speed 1½-fold, it is working without breakdowns, and it has to its account 1,000 meters of above-plan penetration.

Yet Azerbaijan's oil explorers are in great arrears to the country. The sharp criticism of the state of affairs in the republic's oil industry that was sounded at the recent plenum of the Azerbaijan Communist Party Central Committee applies to a great extent to oil and gas explorers. In most drilling administrations, the breakdown rate is high, drilling speed is low, and gross violations of labor and technological discipline are permitted. During the first 11 months of this year Azneft' [State Azerbaijan Oil Industry Association] drillers fell short of the plan by almost 15,000 meters of exploratory drilling, Kaspmorneftegazprom [Caspian Offshore Oil and Gas Production Administration] by more than 21,000 meters. All this cannot help but slow down the discovery and introduction into development of new, promising fields, areas and geological structures.

Miscalculations permitted during the design of wells, the choice of their structure and development of the operating processes cause anxiety. The quality of drilling leaves much to be desired. VYSHKA has already reported how one of the high-flow rate wells of the NGDU [Oil and Gas Production Administration] Muradkhanlyneft' ceased operation a week after well completion because of a defect in the drill string. And here is another, more publicized example. At the Pirsaga area of the NGDU Karadagneft', during the mastery of well No 108, a breakdown occurred because the Kyursang drillers who did the penetration work did poor-quality work when cementing the production string.

Such cases, unfortunately, are not isolated. However, in some cases, active measures for preventing complications are not taken during the work, and the guilty go unpunished.

The unsatisfactory state of geological exploration and prospecting is explained to a great extent also by the slow pace and low quality of the buildup of facilities for the exploration areas. No few messages arrive in our editorial offices, particularly from exploration sites that are located in the central and western regions of Azerbaijan, about the fact that the erection of extremely important facilities upon which normal operation of the drilling brigades depends, is being hampered, and the access routes to the drill rigs are in poor condition. Serious deficiencies exist in the organization of cultural and domestic-amenity services for those who explore the earth's depths and in the satisfaction of their daily needs.

The task of party and trade-union organizations and of the supervisors of drilling administrations and associations is to eliminate more quickly existing deficiencies in the organization of drilling and geological exploration, to raise the responsibility of personnel for the job entrusted to them, and to mobilize the penetrators of the earth's depths in the drive for a sharp rise in the effectiveness of searching for new stores of fuel. It is necessary, as was pointed out at the December 1981 plenum of the Azerbaijan Communist Party Central Committee, to put an end to the dispersion of forces and resources over numerous facilities, and to concentrate the efforts of the oil explorers on the more promising areas, primarily in the Bulla-Offshore, imeni 28 Aprel', Sazhdag and Zardob and adjacent regions.

Production workers and scientific-research and design organizations of the oil industry, primarily AzNIPIneft', should pay more serious attention to raising the authenticity of geological information for making up designs for the construction of wells and to improving their design. This is one of the most important prerequisites for reducing the breakdown rate--a rise in the reliability of well penetration. At the same time, it is necessary to improve designers' surveillance over strict observance of the design tasks and over the technological support for all stages of drilling.

Oil explorers encounter many difficulties in developing wells. Often they spend many months of hard work stimulating the flow of fuel. It is the duty of specialists and scientists, taking the geological log of the wells into account, to develop effective methods for discovering productive regions.

Exploration for oil and gas is a shockwork front. The best forces of the penetrators of the earth's depths and the necessary supply and equipment resources should be sent here. The flaming word of the party agitator and propagandist, who unite the people in the struggle against difficulties, should be sounded at exploration sites, to mobilize the people for shockwork.

Party and trade-union organizations should pay special attention to studying the advanced work experience of advanced brigades and to the wide introduction of it. Experience indicates that where the work has been organized with precision, model upkeep of the equipment is furnished, and technological discipline is strictly observed, success is achieved and tasks are fulfilled or overfulfilled, even where there are shortages of equipment and tools and certain scarce materials.

The 11th Five-Year Plan is picking up speed. Azerbaijan's oilfield workers, like other workers of the republic, are participating actively in the socialist competition for a worthy greeting to the 60th anniversary of the forming of the USSR, and are striving to mark each shockwork shift with labor successes.

It is to be hoped that Azerbaijan's famous oil and gas field explorers will successfully solve the tasks that were set for them by the 11th Five-Year Plan and will make their contribution to development of the fuel-and-power engineering complex of their republic and their country.

11409
CSO: 1822/60

LARGE GAS GENERATOR FOR PROCESSING SHALE BUILT AT KOKHTLA-YARVE

Moscow KRASNAYA ZVEZDA in Russian 27 Dec 81 p 4

[Article by V. Yefimov, division manager of the Scientific-Research Institute for Shale and candidate of engineering sciences (Kokhtla-Yarve): "A Specially Built Generator"]

[Text] The Soviet Union is in first place in the world in the mining of fuel shale. But the problem is not just that of bringing the valuable natural raw material to the surface. It is important to use these riches to the maximum for the needs of the country's economy. Today the shale-processing industry's successes depend greatly upon the effectiveness of the industrial processes that enable high-quality shale resin--a semifinished product--to be obtained, from which many valuable chemical products are then produced. Such a development of the industry requires that large-scale production, capable of competing with petrochemicals, be created.

In brief, new and more productive equipment is needed. This is necessary for the integrated use of shale and for conversion to an energy-technology system. Specialists of the Scientific-Research Institute for Shale, in collaboration with colleagues of Lengiproneftekhim [Leningrad Branch of the State Scientific-Research and Design Institute for the Petrochemical Industry] and engineers of Slantsekhim [Shale Chemicals Production Association] imeni V. I. Lenin, designed a gas generator whose capacity is 5-fold that of existing units. Mechanization, automation and industrial processes that permit a severalfold increase in labor productivity and in the output of resin are used widely in the new gas generator. The annual economic benefit from the operation of such an installation will be, according to our calculations, 270,000 rubles.

The creation of a unit of such high capacity became possible thanks to the use of new engineering solutions that were tested on so-called cold models and then were checked under industrial conditions.

In creating the gas generator--and it can boldly be called unique, for there is no similar installation anywhere else in the world--original engineering innovations that are protected by a number of patents have been used. Some of them have been patented in 16 countries of the world. More than 35 patents have been obtained today. During development of the new installation, a group of specialists of the institute were awarded honorary VDNKh SSSR [Exhibition of Achievements of the National Economy of the USSR] certificates and medals.

The first gas generator with a separate condensational system and capable of processing 1,000 tons of shale per day has already started to operate. The installation, erected on an open site, is impressive in its dimensions: its outer diameter is 9 meters, height of the cylindrical body is 21 meters, and the total height of the whole unit, including the shale hopper, is 35 meters.

During the assimilation of the new structure, setting-up work was done on the equipment and apparatus, as well as the measuring and monitoring instruments and systems for the automated control of the complicated industrial process. Boilers for the combustion of low-calorie gas for making steam have already been erected and tested. Construction has been completed and mastery of the installation for scrubbing hydrogen sulfide from the gas and simultaneously obtaining sulfur has started. Work is going on simultaneously for the designing of a large shale-processing department with a capacity of 3-3.5 million tons of lump shale per year.

The requirements of energy science are already compelling us to take a look at tomorrow. Our scientists are working on the creation of a unit of still greater capacity, based on the 1,000-ton gas generator. It will be especially promising for the industrial use of the fuel shales that are lean in the organic portion, which are more widely distributed in the ground.

Preliminary design studies and research of the properties of semicoking lean shales tell of the possibility of creating such units with a capacity of up to 3,000 tons of shale per day. These will become the base for large enterprises capable of processing up to 20 million tons of natural raw material per year in integrated fashion.

Shale processing is going through a second birth today. And this again tells about a great future for our fuel shale.

11409
CSO: 1822/74

GAS, THE ATOM TO FIGURE INCREASINGLY IN FUEL-AND-POWER COMPLEX

[Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 1

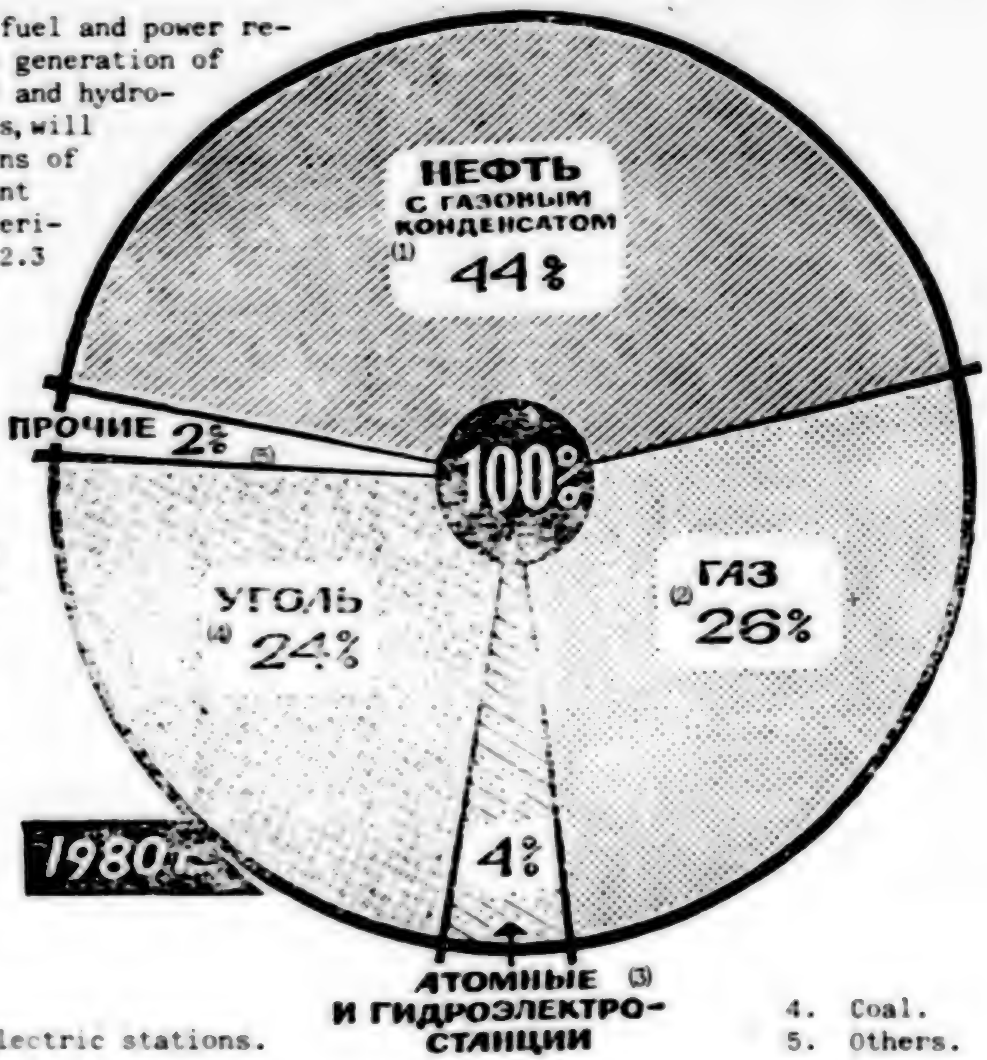
[Article: "The Fuel and Power Complex--the Economics of the 11th Five Year Plan"]

[Text] Major measures are being taken during the 11th Five-Year Plan to further develop the country's fuel and power complex.

The overall amount of fuel and power resources, including the generation of electricity at nuclear and hydroelectric power stations, will grow by 300 million tons of standard fuel equivalent during the five-year period and will amount to 2.3 billion tons in 1985.

About 132 billion rubles of capital investment--1.5-fold more than during the 10th Five-Year Plan will be allocated to the development of the fuel and power complex as a whole.

The share of gas and nuclear power in the structure of the primary energy sources will increase (see the diagrams).



Key:

1. Oil plus gas condensate.
2. Gas.
3. Nuclear and hydroelectric stations.
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5. Others.

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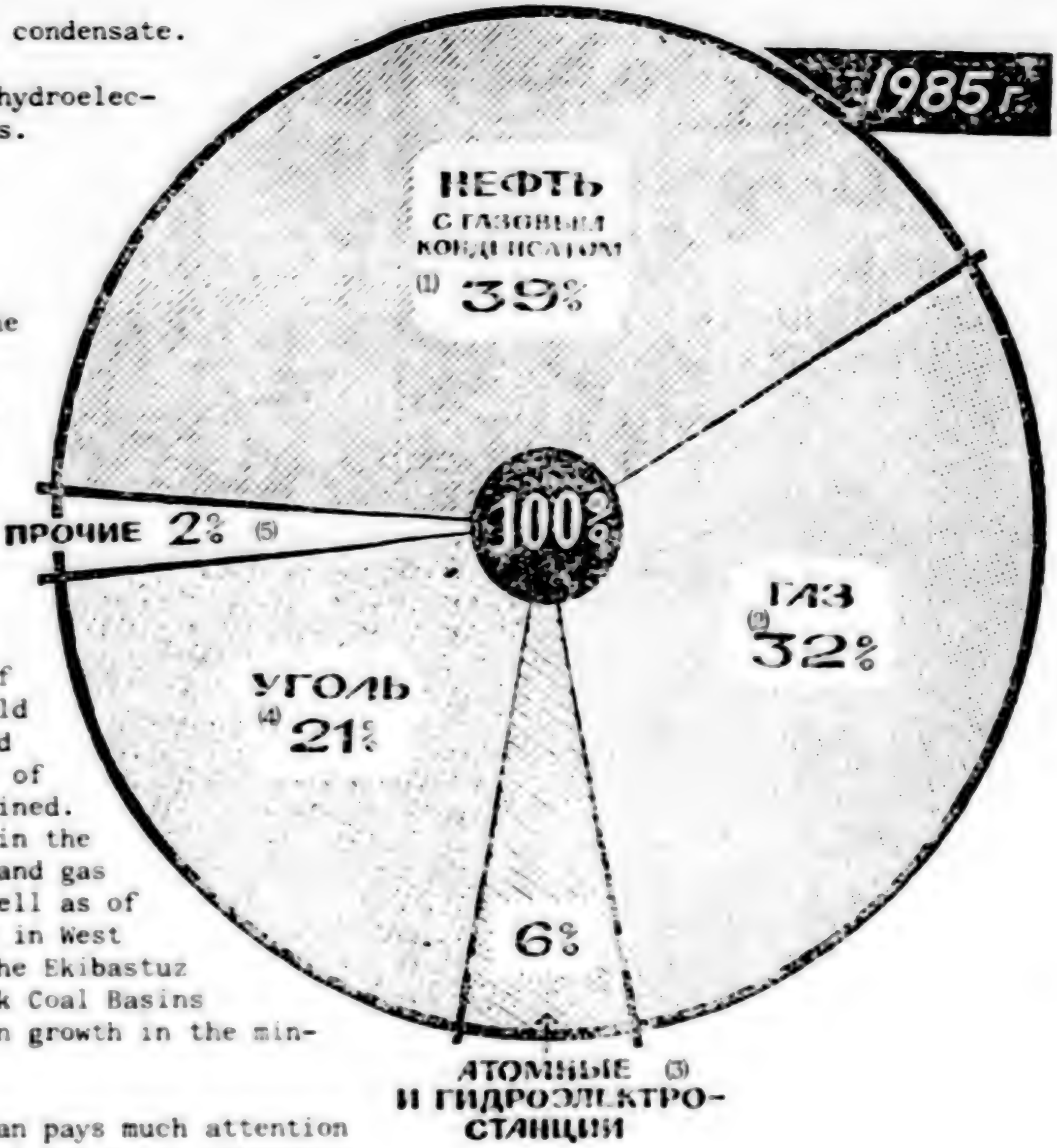


During the 11th Five-Year Plan the generation of electricity at nuclear electric power stations will grow 3-fold. In 1985, 630 million tons of oil, including gas condensate, and 630 million m^3 of natural gas should be recovered, and 775 million tons of coal should be mined. The main growth in the recovery of oil and gas condensate, as well as of gas, is to occur in West Siberia, while the Ekibastuz and Kansk-Achinsk Coal Basins will see the main growth in the mining of coal.

The five-year plan pays much attention to savings of fuel and power resources. In 1985 savings should be more than 200 million tons of standard fuel equivalent, instead of the 125 million tons of 1980.

11409
CSO: 1822/74

PLANS FOR IMPROVING GAS INDUSTRY TOLD

Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 2

[Interview with USSR Minister of Gas Industry Vasiliy Aleksandrovich Dinkov: "The Gas Industry in the March of the Five-Year Plan"]

> [Text] USSR Minister of Gas Industry Vasiliy Aleksandrovich Dinkov answers EKONOMICHESKAYA GAZETA's questions.

[Questions] What were the main results that the gas industry concluded the first year of the five-year plan with?

[Answer] I will cite some figures that characterize the pace of the industry's growth. At the end of last year the country had begun to receive 1.1 billion m^3 more gas per 10-day period than during that same portion of December 1980. The recovery of this efficient fuel and raw material for the chemical industry exceeded 465 billion m^3 in the USSR during the first year of the five-year plan. Our industry's workers fulfilled the state plan ahead of time, on 25 December. They took more than 7½ billion m^3 of gas above the goal from the ground and sent it over trunk pipelines to consuming regions.

These are the results of the shockwork and the harmonious work of many thousands of wage workers and specialists. The fact that all Mingazprom [Ministry of Gas Industry] associations successfully coped with the year's plans for the recovery and treatment of gas and with other technical and economic indicators demonstrates the growing heat of the socialist competition.

Gas-field workers of West Siberia, where a large-scale program for an augmented buildup of gas recovery is being implemented, distinguished themselves in the All-Union competition. The collective of the Tyumengazprom Association, in conquering new fields in the difficult conditions of the North, increased gas recovery by 22.1 percent over the 1980 level. The national economy received 176.1 billion m^3 of gas from here.

The workers of the Orenburg gas-and-chemicals complex deserve a kind word. Strictly observing industrial discipline and using production capacity more completely, this collective produced during the year 48.7 billion m^3 of gas, a large amount of gas condensate, sulfur, liquefied gas and other valuable products for chemicals and petrochemicals and the production of mineral fertilizer.

Last year the Ukrgazprom and Turkmengazprom Associations increased the operating effectiveness of the old well inventory and the capacity for preparing gas at the field for transport, and they improved the operation of gas pipelines. Both collectives overfulfilled the prescribed tasks.

Last year Uzbekistan marked the introduction into operation ahead of schedule of the third phase of the Mubarek complex for the recovery and treatment of 5 billion m^3 of natural gas per year and for the production of sulfur. Comrade L. I. Brezhnev congratulated those who participated in the construction and introduction into operation of the third phase for this labor victory.

Gas-industry workers have exactingly and self-critically evaluated the results achieved in 1981. Against the background of obvious successes, we also see clearly deficiencies in economic activity. Not all production enterprises are fulfilling plan tasks for the indicators that have been established. There are laggards among them. Nor can one consider the situation satisfactory in regard to the introduction and assimilation of the industry's new fixed capital.

[Question] What are the main goals for developing the industry in 1982?

[Answer] The goal set for this year is strenuous. It proceeds from the overall task of developing the country's fuel and power complex during the 11th Five-Year Plan. In addressing the November 1981 CPSU Central Committee Plenum, Comrade L. I. Brezhnev said: "The plan calls for an appreciable growth in the generation of energy and the production of fuel, especially of gas."

The task approved for 1982 takes into account a consistent increase each year in the share of gas in the production structure for all types of fuel during the five-year plan. It is planned to bring gas recovery in the USSR up to 492 billion m^3.

The technical and economic indicators of the plan for the year have been balanced with the material, financial and labor resources. They were delivered to the associations, enterprises and organizations in good time. Concrete measures for enlisting additional reserves for production are now being developed in the working collectives. The goal is not only to fulfill but also to overfulfill the 1982 plan for each segment of the gas industry.

West Siberia's gas-field workers are showing an example in the competition. As is well known, they came out with a patriotic initiative--to bring daily recovery of gas up to 1 billion m^3 ahead of time in the first half of 1985. Their initiative has been approved by the CPSU Central Committee. Each collective of Tyumen' workers has set its own intermediate goals, which are, essentially, counterplans. The results of the competition will be checked against them.

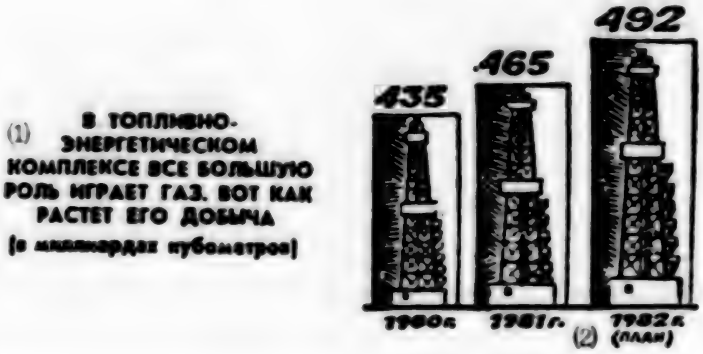
Carrying out this year's tasks will require full expenditure of effort by gas-industry workers.

[Question] What is being undertaken to speed up development of the Urengoy field?

[Answer] According to the plan, the Tyumengazprom Association should recover 209.5 billion m^3 of gas. All the growth--33.5 billion m^3--is to come from Urengoy, and an increase in recovery is to be provided for here later at a boosted pace.

Key:

1. Gas is playing an ever-increasing role in the fuel and power complex. Here is how recovery of it is growing (in billions of cubic meters).
2. (Plan).



This year 4 installations for the integrated treatment of gas, 160 production wells, 100 km of roads within the gas fields and 700 km of power transmission lines are to be put into operation this year at the field. More than 150,000 m^2 of housing with the amenities and a number of facilities for social, cultural and personal-services purposes are to be built and turned over for use in the city of Novyy Urengoy.

The most rapid buildup of gas recovery in West Siberia, mainly in Urengoy, is a large-scale task of nationwide significance. Many ministries and agencies are involved in its realization. Gas-field facilities must be built up in integrated fashion with the simultaneous introduction of centralized power-supply facilities, hard-topped roads, installations for integrated gas treatment, and other facilities.

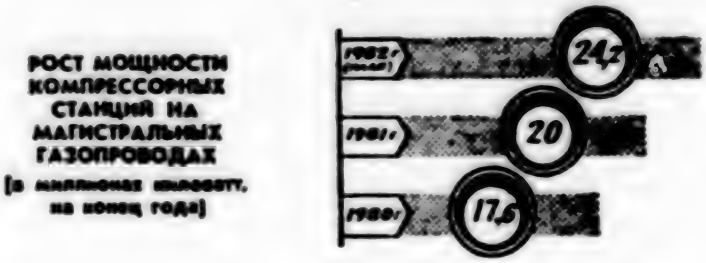
Unfortunately, the scale and pace of the buildup of Urengoy's gas-field facilities still are inadequate, and the plan's deadlines for introducing capacity are not always being met.

We are counting on the builders of railroad mainlines to open up track for work-train traffic on the Tikhaya-Yagel'naya (Novyy Urengoy) section in the first quarter. We are placing great hopes for the erection of housing on the help of Leningrad builders, who have committed themselves to erecting a large amount of good-quality housing. The Tyumengazprom Association, as the client, is obligated, for its part, to show greater responsiveness in capital-construction matters.

Gas-industry workers hope that work will be intensified by USSR Minchermet [Ministry of Ferrous Metallurgy] to provide the industry with new types of pipe--pipe large in diameter and of the petroleum assortment by Minkhimmash [Ministry of Chemical and Petroleum Machine Building] to create highly effective cooling installations and oilfield equipment for the development of gas-condensate deposits; and by Minenergomash [Ministry of Power Machine Building] to build new gas pumping units of higher capacity. Such equipment is needed very much at oilfield installations of West Siberia and on trunk gas pipelines.

[Question] Tell us, Vasiliy Aleksandrovich, about the erection of new gas pipelines in 1982.

[Answer] About 70 percent of the capital investment is directed to the erection of trunk gas pipelines for transporting Siberian gas to the country's central regions. Joint efforts of gas-field workers and builders are needed in the nearest future:



1. Growth of power of compressor stations on trunk gas pipelines (in millions of kw by end of the year).
2. (Plan).

construction of the Urengoy-Petrovsk gas pipeline is to be completed in January (instead of in April), and this year the linear portion of the Urengoy-Novopskov pipeline is to be basically completed and erection of the Urengoy-Uzhgorod trunk line is to begin.

The 1982 plan calls for the introduction into operation of more than 7,500 km of trunk gas pipeline and 52 compressor stations. One of the ways of raising capital investment effectiveness is to convert to the construction, in accordance with unified designs, of outfitted-module compressor stations made of lightweight structure, using highly effective equipment, including gas pumping units of 16,000 and 25,000 kw power.

[Question] What actions have been planned for increasing the operating effectiveness of the gas pipeline network?

[Answer] In our country a unified system of gas supply will continue to be formed, with trunk gas pipelines as the most important and most capital-intensive element. This widely ramified and interconnecting network, with a length of 136,000 km and a total compressor-station power of more than 20 million kw, will provide for the delivery of gas from the places of recovery to all the large industrial regions, and also to export markets.

The unified gas-supply system is controlled from a central control point, using modern means of automation, remote control and automated control systems. This has enabled optimal loading of the gas pipelines, responsive adjustments of the powerful streams of gas, and reduced energy costs for the transport of gas.

Raising the productivity of the existing gas-transporting network by just 1 percent would give the national economy about 5 billion additional m^3 of this high-quality energy source and most valuable chemical raw material.

The ministry is working systematically in this area to further improve the automated control system by using microprocessor equipment, a system of planned preventive maintenance of the linear portion of the gas pipelines and of the compressor-station operating equipment, and the wide introduction of new equipment and advanced technology. For example, this year we plan to overhaul more than 1,600 km of the linear portion and 1,900 gas pumping units. Gas pumping units with a total of 150,000 kw of power that are obsolete or have worked their expected service life will be replaced by more productive, economical and reliable machinery.

One of the important reserves for raising the operating effectiveness of gas pipelines is a leveling off of the seasonal variations in gas transport that arise because of the drop in summer use of the capacity of the gas-turbine pumping units, which comprise more than 70 percent of the compressor pool. The industry's scientific-research organizations are developing measures for raising compressor-station capacity in the summertime, and these will be incorporated in the designs that are intended for the construction of new gas pipelines or the rebuilding of existing ones. According to the computations, the realization of these measures just for six of the largest trunk gas pipelines that are to be built during the 11th Five-Year Plan for the delivery of Urengoy gas to the country's central and western regions will enable the operating effectiveness of the gas pipelines to be raised by 1.2 percent.

[Question] What other reserves still are to be brought to bear?

[Answer] To speed up the mastery of newly introduced gas transport systems and their attainment of design capacity. This is done by optimizing the gradual introduction of the linear portion of the line and the compressor stations, and also by increasing the hydraulic effectiveness of the gas pipeline by insuring the cleanliness of its inner surface right at the time the construction and installing work is completed. In other words, we should strive to see to it that the gas pipelines' hydraulic effectiveness is close to 95-97 percent at the stage of turnover for operation.

Mingazprom is doing much work, jointly with the machinebuilding ministries, primarily Minenergomash, Minsudprom [Ministry of Shipbuilding] and Minkhimmash, to bring the readiness factor of gas pumping equipment up to 97 percent, which will enable the reliability and effectiveness of gas pipeline operation to be raised. In order to support the successful conduct of this work, the ministry will expand in 1982 the products mix of spare parts for gas pumping units and increase the output thereof at subordinate enterprises.

Along with solution of a set of tasks that will provide for a further boosted buildup in the recovery and transporting of gas, a subject of our special concern is the saving in every possible way of this valuable gift of nature, not only at our industry's enterprises but also throughout the whole national economy. During the 11th Five-Year Plan we plan to take major steps to work out and introduce more economical and effective gas-using equipment and energy-saving technology, to improve accounting and norm-setting for gas consumption, and to make greater use of the heat of waste gases from the operating installations. An important prerequisite to the economical consumption of gas in the national economy is the strict observance of gas-consumption discipline by all enterprises without exception.

[Question] What measures will be taken in the industry in 1982 to improve the economic mechanism?

[Answer] During the time that has passed since the party's and government's decision to improve the economic mechanism, the gas industry has done much definite work in this area. Thus, a system of plan indicators that will reflect more completely the activity of production enterprises and the ministry as a whole has been worked out. The role of the indicators that characterize the quality and effectiveness of work has been raised: association and enterprise plans now include expenditures for the production of a unit of output, the prime cost of transport for 1,000 m^3 of gas, and a task to reduce the prime cost of output by introducing new equipment and advanced technology, and also to reduce manual labor and other indicators.

This year a conversion is being made to the forming of economic incentive funds in accordance with stable standards--cubic-meter rates--in order to increase incentives for enterprises to increase the recovery of gas, condensate and crude oil. These are being established differentially: for preservation of the level of recovery achieved, for growth in recovery, and for growth in labor productivity. A plan indicator for standard net output is being introduced in the machinebuilding subbranch.

The ministry is paying tireless attention to introducing cost accounting in scientific-research organizations, strengthening the ties of science with production, and raising the role of institutes in solving the industry's tasks. Moreover, three large Mingazprom construction trusts are being converted in an economic experiment to planning labor productivity in accordance with standard net-output equivalent.

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COAL INDUSTRY MINISTER SAYS SCIENCE, TECHNOLOGY MUST BE APPLIED BETTER

Moscow UGOL' in Russian No 11, Nov 81 pp 5-9

[Article by V. D. Nikitin, First Deputy Minister of USSR Coal Industry: "The Coal Industry's Tasks of Speeding up the Pace of Scientific and Technical Progress in Light of the 26th CPSU Congress's Decisions"]

> [Text] Workers of the Soviet Union! Speed up scientific and technical progress! Introduced advanced experience everywhere! Strengthen conscious communist discipline! Demonstrate creative initiative!
>
> Develop the economy intensively!
>
> (From the CPSU Central Committee slogans on the 64th anniversary of the Great October Socialist Revolution)

The Main Directions for the Economic and Social Development of the USSR During 1981-1985 and During the Period up to 1990, which was approved by the 26th CPSU Congress, planned to provide for the mining of 770-800 million tons of coal in 1985. In so doing, growth in the amount of coal mined and processed would be provided for mainly through increased labor productivity.

In order to solve the tasks set by the 26th CPSU Congress a broad set of measures for speeding up scientific and technical progress should be developed and introduced, and the technical level of production should be raised in every possible way.

The coal industry now has at its disposal a substantial scientific and technical potential, and it can support the required pace in reequipping the industry with machinery. Sixteen thousand scientific staff workers and design developers, of whom 124 are doctors of sciences and 2,240 are candidates of sciences, are at work in 36 scientific-research and design-development institutes. The institutes' experimental base is represented by 29 test plants, shops and other subunits, the value of whose annual output exceeds 43 million rubles. Fourteen design institutes are operating in the industry.

Scientists, design developers, engineers, technicians and managers of institutes, production associations, enterprises and All-Union associations and administrations of USSR Minugleprom [Ministry of Coal Industry] are working actively on problems of raising the industry's technical level.

During the 10th Five-Year Plan alone, 426 models of new items were created.

In order to mine coal by the surface method, ERShRD-5000 rotary excavators and walking draglines with bucket capacities of 40 and 100 cubic meters and with boom lengths of 85 and 100 meters were created and are now in use. The ESh-100/100, the most powerful dragline in the country and in Europe, and the PE-ZT, the world's most powerful traction unit, which has direct current and an adhesion weight of 372 tons, have been introduced into operation. The industry's motor-vehicle fleet has been augmented by new dump trucks and coal carriers with load capacities of 75 and 120 tons. As a result of use of the new equipment and of progressive technology at strip mines, the share of surface-mined coal in the overall volume of coal mined was brought up to 37.9 percent at the end of the 10th Five-Year Plan versus 32.2 percent in 1975.

Much work has been done to further improve the underground coal-mining method. At present KM-130, 1UKP, 2UKP and other longwall mining machines have been created for gently sloping seams of medium thickness and for thick seams. New means for mechanizing preparatory work (the 4PP-2 and GPKS cutter-loaders), transport equipment (1LT-100 and 2LT-200 conveyors), and equipment for other production processes have been created and introduced.

Most of the parameters of the machines for underground operations that are now being manufactured correspond to the level of the best foreign models, and some of them--the 1ANShch and AK-3--have no counterparts in world practice.

Use of the new machinery has enabled coal-mining processes to be completely mechanized in the Moscow, Pechora and Karaganda basins. In the Donets Coal Basin, which has especially complicated mine geology, the share of mining by longwall miners during the 10th Five-Year Plan increased from 40.8 to 56.7 percent, but for the industry as a whole it reached 67.4 percent in 1980.

The amount of excavation performed by drifting cutter-loaders in 1980 increased by 16 percent over 1975, to about 2,000 kilometers; the level of cutter-loader drifting for the branch as a whole increased from 30.2 percent to 38.1 percent, and in the Karaganda and Moscow basins it was brought up to 85 percent.

Attention has been devoted to improving the technology of performing mining work, especially in the complicated mine-geology conditions found in deep underground mines. A horizon scheme for doing preparation work, where the fields to be excavated are arranged along the dip or the rise, has been developed, enabling the elimination of multiple-stage transport and the introduction of direct-flow ventilation in sections where gas is abundant. In 1980, 15 percent of the breakage faces were prepared under such schemes.

In the Karaganda, Donets, Pechora and Kuznetsk basins, pillar-free technology for the preparation and working of seams was used and improved, with a view to reducing coal losses underground and increasing work safety at seams where there was a risk of explosion, outburst or fire. In 1980, 50 percent of the coal was mined by this method. Methods for reinforcing weak rock are beginning to be applied, methods for weakening roofs that are difficult to collapse are being used, and progressive operating schemes are being introduced.

Much attention is being paid in the industry to the development and introduction of methods and means for increasing safety and to an improvement of working conditions for the miners. An integrated program of work in the drive against sudden outbursts of coal and gas has been worked out. Realization of the results of research at underground coal mines enabled the number of sudden outbursts to be reduced by a factor of 1.7 in 1980. The execution of measures in the drive against dust in the air has enabled the morbidity rate for pneumoconiosis to be reduced by 35 percent during the last 10 years. The execution of work to raise the technical level of production at underground mines has helped to reduce the amount of manual labor used.

The technology for processing the raw material at the preparation plants is being improved. Highly productive equipment for the preparation, upgrading, demoisturizing and drying of coal have been manufactured, and they are being successfully assimilated.

The achievements of the industry's science are being used in designs for new enterprises and the rebuilding of old ones. In recent years, a number of modern enterprises with high technical and economic indicators have been built and put into operation at the Raspadskaya (annual productive capacity of 7.5 million tons and labor productivity of 160 tons/month per worker), the Estonia (5 million tons of shale and 270 tons/month), the Borgashorskaya (4.5 million tons and 225 tons/month) and the Tentekskaya (4 million tons and 174 tons/month) underground mines and the Bogatyr' (50 million tons and 1,730 tons/month) strip mine, and the Sibir' (5.6 million tons and 1,250 tons/month) and Chervonogradskaya (9.6 million tons and 1,460 tons/month) preparation plants. Designs have been approved for the following strip mines: the Vostochnyy (annual production capacity of 30 million tons and labor productivity of 2,140 tons/month per worker), the Berezovskiy (55 million tons and 2,280 tons/month), and a number of others. A new, qualitative step has been taken from the design of individual enterprises to the creation of designs for fuel-and-power complexes.

The work of construction organizations exerts a decisive influence on the overall results of the industry's activity, since the coal industry requires the constant renewal of fixed capital as no other industry does.

The technical level of construction operations as a whole is characterized by a systematic expansion of the area of use of effective constructional structure and equipment and an increase in the amounts of work done with progressive technology. The amount of fully prefabricated construction in 1980 rose 1.8-fold over 1975, and the erection of tall structures (headframes, hoppers, coal storage and others) made of cast-in-place reinforced concrete in accordance with progressive technology, using mechanized slipforms, was widely disseminated in construction.

Mobile packaged equipment for tunneling shafts, the use of which enables the time for building them to be halved and the labor intensiveness of the work to be reduced by a factor of 10-12, is being introduced.

The creation and successful conduct of industrial tests of a promising machine--the shaft-tunneling cutter-loader SK-1, the use of which enables the tunnelers' labor productivity to be increased 3-fold to 4-fold, should be noted.

During the 10th Five-Year Plan, coal-industry machinebuilding institutes and plants worked to master the output of new and progressive machines and equipment and to further raise the technical level of production. The output of cutter-loaders of high power intensiveness increased from 122 to 206, and of supports from 370 to 470 for longwall sets.

The volume of output of products of the highest quality category was brought up to 19.3 percent of total production volume. The share of progressive types of equipment in the pool of metal-cutting machine tools increased from 3.4 to 12 percent in 1980 over 1975. However, despite existing successes, the pace of technical improvement in production is still inadequate in the coal industry.

In the last 3 years the magnitude of the most important indicators of the concentration of mining work--workload per breakage face--decreased. Labor productivity for the mining of coal also was reduced.

The creation and introduction of means for the integrated mechanization of coal mining at thin and steep seams, of cutter-loaders for drifting in hard rock, and of means for mechanizing and automating auxiliary production processes are being performed at an inadequate pace.

It should be noted that technical development of the industry's enterprises is being accomplished against a background of long-term negative factors, whose influence has appeared especially strongly during the 10th Five-Year Plan.

During the 10th Five-Year Plan the growth of productive capacity was reduced, making it necessary to prolong the operation of 300 small underground mines that operate at a low technical level. The deepening of shafts and the preparation of new horizons are lagging. As a result, schemes for transport and ventilation are made more complicated, and drifting takes longer. Under these circumstances, it is especially difficult and sometimes even simply impossible to use modern equipment effectively.

The CPSU Central Committee and the USSR Council of Ministers are paying much attention to the coal industry's development and are extending it considerable assistance by way of allocation of supply and equipment resources and the solution of other most important tasks for developing equipment for the leading coal basins and for the industry as a whole.

Throughout the Ukraine's Donbass [Donets Coal Basin] alone, 285 new horizons will be prepared and 150 vertical shafts and large-diameter holes will be driven. The amounts of reconstruction and of reequipping of underground mines with machinery have been planned, as have increases in the throughput of the main links of the mines' industrial chain.

Moreover, special measures are contemplated in regard to a substantial strengthening of the industry's construction organizations, as well as to the wider enlistment of contracting organizations of other ministries to build coal-industry facilities, especially in the country's eastern regions.

At present, expansion of the area of use of the means of integrated mechanization is being accomplished, mainly at seams with especially complicated mine geology (small thickness, steep bedding, roofs that are unstable or difficult to collapse, and increased risk of explosions and outbursts). In so doing, it is necessary first to solve a number of complicated technical problems, since in world practice there is practically no coal-mining experience in integrated mechanization of operations under the conditions indicated.

Machines for such conditions are becoming more labor-intensive in manufacture, and they require the use of metalworking equipment of high precision and highly skilled personnel.

During the 11th Five-Year Plan the task of increasing the production of longwall miners and of supports 1.2-fold, of tunneling cutter loaders and of belt conveyors 1.3-fold, and of spare parts 1.35-fold has been set for the industry's machinebuilders. In so doing, the machinebuilders' main task is to bring the annual output of longwall miners up to 100 for the KM-103, to 40 for the KMT, to 25 for the 1UKP, and to 25 for the KM-130 and 2UKP by the end of the five-year plan.

In recent years equipment provisioning for mine-preparation work has slowed, and this cannot help but affect timely reproduction of the breakage-face front. USSR Minugleprom has adopted measures for improving and speeding up the manufacture of tunneling equipment and has increased the production of cutter-loaders, drilling machinery and transport equipment. This has enabled the reduction in the amounts of drifting work performed to cease.

At the same time, the amount of excavation of hard rock that has been done where heavy cutter-loaders of the Yasinovataya Machinebuilding Plant of USSR Mintyazhmash [Ministry of Heavy and Transport Machinebuilding] have been used is about 20 percent of what is possible.

In addition to the measures of a technical nature that are used for overcoming the effects of long-term negative factors, it will be necessary in the nearest future to conduct work in associations and at enterprises to improve the organization of production and to raise its effectiveness.

At present, monitoring the activity of subordinate organizations, even on the part of USSR Minugleprom staff workers, still is not up to par. Supervisors still are not exacting enough in regard to late and poor-quality fulfillment of plan tasks. Any plan, even the most rational, can go unfulfilled if it is not strengthened by the appropriate organizational work, which is aimed at its unconditional fulfillment in the established amount by the planned deadline.

The importance of plans for scientific and technical progress that are united into a single complex of work for the creation, assimilation and introduction of new machinery and advanced technology is great. Scientific-research, design-development and design institutes, machinebuilding plants, production associations and enterprises, and other organizations are participating in realization of these plans and in supporting all stages of the science-equipment-production cycle.

The final results of all the work--raising the technical level of production within the industry and improving technical and economic indicators of the work of coal industry enterprises--depends greatly upon the quality of the work of each of these elements.

In 1981-1985 an acceleration of the pace of technical progress in the coal industry is called for, based on the reequipping of production facilities, on the creation and wide introduction of improved technology for mining operations, of means for the integrated mechanization and automation of coal mining, especially for thin and steep seams, including systems of machines for excavating coal without the constant presence of people at the mine face, and of cutter-loaders for excavating hard rock, and on the mechanization and automation of auxiliary production processes.

It is planned to master a number of new machines of high unit capacity and progressive technological processes and excavation systems for surface operations during the current five-year plan, and, based thereon, to bring the amount of coal mined by the surface method up to 314 million tons in 1985, an increase of 50 million tons, or of almost 20 percent, over 1980.

The area of use of means of integrated mechanization where mine geology is complicated will be expanded at underground mines. The level of mining by longwall mining machines should be brought up to 71.5 percent, and the workload on all types of longwall miners that are used must be increased. The amount of drifting performed by cutter-loaders is to be brought up to 2,256 kilometers and its level brought up to 43.5 percent, by the end of the five-year plan.

Based on the introduction of measures for scientific and technical progress, it is planned to insure growth in the labor productivity of workers engaged in coal mining by 12 percent and to compensate completely for the influence of negative mine-geology factors.

It is necessary to support the processing of 500 million tons of rock mass and to create and master more than 25 models of new machines and equipment at USSR Minugleprom coal-preparation enterprises by 1985. Special attention will be paid during the 11th Five-Year Plan to the creation and use of means for mechanizing and automating the monitoring and sampling of run-of-mine coal and of the products of upgrading.

Work to improve design technology, primarily the introduction of automated designing systems, will be speeded up so that by 1985 at least 15 percent of all design work will be carried out with the use of computers.

In order to speed up scientific and technical progress in capital construction in the industry, efforts should be concentrated in 1981-1985 on realization of specific integrated programs, as well as on the contemplated program for the manufacture at mine-repair plants of construction organizations, production associations and plants of Soyuzuglemash of about 20,000 units of different types of equipment, tools and devices that will enable manual labor used in construction to be greatly reduced.

It will be necessary to bring the share of completely mechanized work up to 58.5 percent and to reduce by 5 percent the number of workers engaged in heavy manual labor, by introducing new equipment and establishing sections, lines and production facilities that have been mechanized and automated in integrated fashion.

In order to solve successfully the tasks of raising the technical level of production, USSR Minugleprom plans to develop and realize, jointly with its institutes, 20 specific integrated industry programs and 37 scientific and technical programs in 1981-1985. Singled out among them are programs to improve: the technology and equipment at strip mines; the layout of underground mining operations and the concentration of production; mine preparation operations and methods and means for conducting, strengthening, preserving and maintaining drifts; breakage-face work at thin seams; the protection of equipment and structures from erosion; and some other programs.

The fulfillment of specific industry programs and the solution of scientific and technical problems will be accomplished on a new and more improved organizational and standard-practices base.

The basis for managing scientific and technical progress is the planning of its development. Work during the Ninth and 10th Five-Year Plans to organize NIOKR [Scientific-Research and Design-Test Work] and to introduce its results on the basis of the industry's plans has enabled a new procedure to be worked out for planning scientific and technical progress in the coal industry, proceeding from the main requirements of the decree of 12 July 1979, "On Improvement of Planning and Strengthening of the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality."

A feature of this procedure for planning consists in use of the specific-program method, which insures correlation of the tasks for raising indicators of the technical level of production with the measures for achieving them and integration in the conduct of all the necessary operations.

The scientific-research, design-testing and technological operations that are necessary for carrying out the measures and tasks contemplated by the appropriate plans for raising the technical level of production within the industry are being performed on job authorizations that are issued to the institutes, production associations and enterprises, and organizations by the ministry subdivisions that have been given responsibility for carrying out the indicated plans.

The introduction of such an organization for planning research and development will enable an organic tie to be provided for the areas of development of the industry's science with the requirements for the technical improvement of production facilities.

In carrying out CPSU Central Committee General Secretary Comrade L. I. Brezhnev's instructions, "to formulate with precision the practical tasks that will require the maximum attention of scientists--that is primarily a matter for central planning and economic organs," during the 11th Five-Year Plan the role and responsibility of the supervisors of USSR Minugleprom and of its administrations and associations for realization of the planned programs of work to develop science and technology and to raise the technical level of production will be strengthened. Thus, the deputies of the USSR Minister of Coal Industry have been appointed supervisors of programs for solving the scientific and technical problems of the State Plan for 1981-1985 by Goskomitet [State Committee for Science and Technology]. In their turn, the supervisors of the appropriate administrations and All-Union associations have been named by USSR Minugleprom as supervisors of specific integrated industry programs.

A main direction for accelerating scientific and technical progress is a concentration of forces, funds and resources on solution of the most important problems for developing the industry. During the 11th Five-Year Plan the number of scientific and technical problems and specific programs has been halved in comparison with the 10th Five-Year Plan.

The task of central and prime client institutes and administrations and associations is to provide for a substantial reduction during development of the five-year plan for science and technology in the number of operations being carried out simultaneously and, thanks to this, to reduce considerably the time taken to create, master and introduce new equipment.

In accordance with the CPSU Central Committee and USSR Council of Ministers decree, "On the Improvement of Planning and Strengthening of the Influence of the Economic Mechanisms on Increasing Production Efficiency and Work Quality," the industry's scientific and design-development organizations and production associations and enterprises were converted, beginning 1 January 1981, to the cost accounting system for organizing the work to create, master and introduce new equipment on the basis of job authorizations (or contracts).

All the necessary standards and standard-practices documents for the cost-accounting system of operations have now been prepared and improved. It is the task of USSR Minugleprom institute, enterprise and production and All-Union association workers to use more completely the basic principles of this system to speed up scientific and technical progress in the industry and to create conditions that will raise the effectiveness of the institutes' scientific and technical activity.

Special attention should be paid to raising plan and performance discipline. It is necessary primarily to provide for the development of a plan for raising the technical level of production within the industry during 1981-1985, all facets of which will have been substantiated, mutually coordinated and concurred in, and of the appropriate job authorizations for conducting scientific-research and design-test operations.

Institutes, All-Union and production associations, and plants should plan concrete measures which, in combination with USSR Minuglerpom's measures, will enable solution of the tasks that have been set for increasing production volume and for improving the technical and economic indicators of the industry's work.

The conversion to intensive methods for developing the coal industry urgently requires a uniting of the forces of scientists, design developers, designers and production workers and a substantial rise in the role and responsibility of the engineering services of enterprises and associations.

An integrated approach to solution of the tasks that face the industry and to realization of the contemplated measures will serve to speed up technical progress in the coal industry, as is required by 26th CPSU Congress decisions.

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DECREE TELLS HOW STRIP COAL MINING OUTPUT SHOULD BE INCREASED

Moscow SOBRANIYE POSTANOVLENIY PRAVITEL'STVA SSSR No 27, 1981 pp 675-680

[An exposition of CPSU Central Committee and USSR Council of Ministers Decree No 940, dated 23 September 1981: "On Additional Measures for Speeding up the Development of Coal Mining by the Surface Method in 1981-1990"]

[Text] The decree that was adopted noted that in the past 10 years the surface mining of coal has been further developed, increasing from 165 million tons in 1970 to 269 million tons in 1980, that is, to 38 percent of all coal mined.

At the same time, favorable mine geology for the development of surface coal mining is not being used adequately.

Delays are occurring in construction of the South Yakutia Coal Complex and the Ekibastuz and Kansk-Achinak Fuel and Power-Engineering Complexes and in the development of surface coal mining in the Kuznetsk Coal Basin.

The USSR Ministry of Coal Industry and the USSR Ministry of Power and Electrification are tardy in putting into operation the production capacity of strip coal mines and the generating capacity of thermal electric-power stations that are under construction, they have not provided for first-priority creation of enterprises and facilities for a construction-industry base, and they have not carried out tasks for building and introducing housing and facilities for municipal services and for cultural and domestic-amenity purposes into operation.

The decree calls attention to the fact that the Ministry of Heavy and Transport Machine Building, the Ministry of Power Machine Building, the Ministry of Electrical-Engineering Industry and the Ministry of Automotive Industry have permitted a great lag in creating and mastering the production of strip-mining and transporting equipment of high unit capacity for the construction and operation of large coal strip mines. At the existing USSR Ministry of Coal Industry strip mines, stripping work is proceeding with a great lag, and idle time of excavators and transport equipment is occurring because of inadequate provisioning of spare parts and development of a repair base.

The CPSU Central Committee and the USSR Council of Ministers have determined that one of the most important tasks of the USSR Ministry of Coal Industry, and also of the USSR Ministry of Power and Electrification, the Ministry of Heavy and Transport Machine Building, the Ministry of Power Machine Building, the Ministry of Electrical-Equipment Industry, and the Ministry of Automotive Industry is the development at an overpowering pace of the mining of coal by the more effective surface method, based upon:

an increase in the capacity for mining and processing coal through the construction, rebuilding, reequipping and modernization of strip mines and preparation plants and the execution of other organizational and technical measures:

the creation of thermal electric-power stations with power units of high unit capacity, based upon large strip mines;

mastery of the design capacity of strip mines and preparation plants within the standard periods;

the creation and introduction of new, progressive technology and of mine transport equipment of high unit capacity;

an increase in the share of coal mining that uses continuous-action equipment;

introduction of the integrated mechanization and automation of production processes and a reduction in heavy manual labor;

the execution of measures for the most rapid elimination of the lag in executing stripping work at strip mines;

an increase in the capacity of construction and installing organizations;

improvement of working conditions and a rise in work safety and production sophistication;

the further development of socialist competition, wide dissemination of the experience of brigades and collectives that achieve high indicators in work, the reinforcement of plan, labor and production discipline, a reduction of worktime losses, a rise in labor productivity, and improvement of all technical and economic indicators for the operation of enterprises that mine and process coal and repair equipment; and

improvement of the living, cultural and domestic-amenity conditions of the workers of enterprises and organizations that are connected with the strip mining of coal.

It is ordered that the indicated ministries take steps without delay that will insure fulfillment of the tasks of building strip coal mines and of creating and mastering the production of stripping, mining and mine-transport equipment of high unit capacity, as well as of other tasks called for by the CPSU Central Committee and the USSR Council of Ministers decrees on construction of the South Yakutia Coal Complex and the Ekibastuz and Kansk-Achinsk Fuel and Power-Engineering Complexes and on further development of the Kuznetsk Coal Basin.

The USSR Ministry of Coal Industry is charged with providing for:

the mining of 315 million tons of coal in 1985 and of 394-400 million tons in 1990 by the surface method;

the execution of 1.2 billion cubic meters of stripping work in 1985 and of 1.5 billion cubic meters thereof in 1990; and the construction and introduction into operation in 1982-1983 of preparation installations for extracting coal from coal-containing stripped rock, with a total capacity for processing 4.55 million tons of rock mass per year at strip mines of the Kemerovugol' Production Association.

The USSR Ministry of Coal Industry, the USSR Ministry of Construction, the Ministry of Construction in the Far East and Transbaykal Regions, the USSR Ministry of Power and Electrification and the USSR Ministry of Industrial Construction are charged with:

the introduction into operation of capacity for mining 68.6 million tons of coal at strip mines during 1981-1985 and of 120 million tons during 1986-1990;

start of the construction and rebuilding in 1981-1985 of coal strip mines with a total capacity of 60.9 million tons of coal per year; and

the introduction into operation in 1984-1985 of a preparation plant in the Yakutsk ASSR and a plant for the repair of mine-transport equipment in Pavlodarskaya Oblast.

The CPSU Central Committee and the USSR Council of Ministers have vested in USSR Ministry of Power and Electrification the functions of prime contractor for the construction of a number of facilities for the USSR Ministry of Coal Industry in Ekibastuz of Pavlodarskaya Oblast, in the Buryatskaya ASSR, and in Chitinskaya Oblast.

The USSR Ministry of Installation and Special Construction Work is charged with carrying out a whole set of operations that accord with its mission at facilities of the Kansk-Achinsk and Ekibastuz Fuel and Power-Engineering Complexes.

It was ordered that the USSR Ministry of Coal Industry, the USSR Ministry of Construction of Heavy Industry Enterprises, the USSR Ministry of Construction, the Ministry of Construction in the Far Fast and Transbaykal Regions, the USSR Ministry of Power and Electrification, the USSR Ministry of Industrial Construction and other ministries insure that housing totaling 1.41 million square meters in area be built and put into use in phase with schools and kindergartens, as well as with facilities for municipal services, public health, culture and sports in 1985-1985.

The Ministry of Transport Construction is charged with carrying out work on the construction of outside access railroad tracks and the support facilities thereof, as well as work on the laying and ballasting of permanent type track structures and the erection of manmade structures on the construction site's railroad tracks, at coal strip mines that are being rebuilt or rebuilt and at the thermal electric-power stations of the Ekibastuz and Kansk-Achinsk Fuel and Power-Engineering Complexes.

Tasks have been established for the construction ministries, the RSFSR Council of Ministers, the Ukrainian SSR Council of Ministers, the Kazakh SSR Council of Ministers and the Uzbek SSR Council of Ministers for construction and installing work to be done in 1982-1985 for the USSR Ministry of Coal Industry.

It was ordered that USSR Gossnab insure the centralized supply of construction organizations of the USSR Ministry of Coal Industry, the USSR Ministry of Power and Electrification and the Ministry of Transport Construction, which are building enterprises and facilities of the Kansk-Achinsk and Ekibastux Fuel and Power

Engineering Complexes, with spare parts for motor vehicles and tractors through the appropriate USSR Gossnab materials-and-equipment supplying administrations.

The USSR Ministry of Trade and the RSFSR Council of Ministers are charged with providing for the preferential allocation of retail stocks of foodstuffs and industrial commodities to trade organizations of the USSR Ministry of Coal Industry, the USSR Ministry of Power and Electrification and the Ministry of Transport Construction that serve workers engaged in the construction of enterprises and facilities of the Kansk-Achinsk Fuel and Power-Engineering Complex.

The RSFSR Council of Ministers has been given the task of providing for the delivery of local building materials for the erection of enterprises and facilities of the Kansk-Achinsk Fuel and Power-Engineering Complex to the USSR Ministry of Coal Industry, the USSR Ministry of Power and Electrification and the Ministry of Transport Construction.

The USSR Ministry of Geology has been charged with:

providing in 1981-1985 for the conduct of prospecting work and preliminary exploration for the discovery of sections from which coal may be mined by the surface method in Amurskaya Oblast, Khabarovskiy Kray and the southern regions of the Tungusska and Yakutsk Coal Basins; and

completing detailed exploration by the established deadline and confirming for the State Commission for Reserves of Useful Minerals under the USSR Council of Ministers the coal reserves of fields in the Kazakh SSR, Khabarovskiy Kray and Amurskaya, Dnepropetrovskaya and Irkutskaya Oblasts.

The USSR Ministry of Coal Industry is charged with undertaking in 1986-1990 the development of the Turgay Brown Coal Basin, after constructing an explorational-operational strip mine in this basin in 1983-1985.

It is proposed that the USSR State Committee for Vocational and Technical Education send annually to USSR Ministry of Coal Industry organizations 1,500 graduates of vocational and technical schools in 1982-1985 for the construction of enterprises and facilities of the Ekibastuz and Kansk-Achinsk Fuel and Power-Engineering Complexes and the South Yakutia Coal Complex.

An order was adopted that the Komsomol Central Committee send shockwork Komsomol and student construction detachments to organizations of the USSR Ministry of Coal Industry and the USSR Ministry of Power and Electrification in 1982-1985 for the construction of enterprises and facilities of the Ekibastuz and Kansk-Achinsk Fuel and Power-Engineering Complexes.

The Ministry of Construction in the Far East and Transbaykal Regions is charged with organizing three mobile mechanized columns for carrying out work on the construction of facilities for production and nonproduction purposes in Chitinskaya Oblast and the Buryatskaya ASSR.

The USSR Ministry of Power and Electrification is charged jointly with the Ministry of Automotive Industry with organizing a center for technical servicing of KamAZ trucks in Sharypovo, Krasnoyarskiy Kray, in 1982-1983.

It is ordered that USSR Gosplan, USSR Gossnab and the Ministry of Automotive Industry draft plans for 1982-1985 specifically allocate the USSR Ministry of Coal Industry spare parts and replacement components for railroad and motor-vehicle transport that are in operation at coal strip mines.

The Ministry of Railways has been given the task of fulfilling for the USSR Ministry of Coal Industry the factory repair of rolling stock and track equipment, and it is charged with providing for the expansion and rebuilding of a number of railroad yards, as well as with intensifying the throughput of the railroad tracks on certain open lines of the Tselina Railroad.

With a view to acquiring and retaining personnel for the construction and operation of enterprises and facilities of the Kansk-Achinsk and Ekibastuz Fuel and Power-Engineering Complexes, the USSR State Committee on Cinematography, the USSR State Committee on Television and Radio Broadcasting and the USSR State Committee for Publishing Houses, Printing Plants and the Book Trade are charged with providing for wider publicity in motion pictures, radio, television and the press about the achievements of advanced collectives of construction workers and a comprehensive portrayal of the working and living conditions

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The CPSU Central Committee and the USSR Council of Ministers consider that the further development of coal mining at an overwhelming pace by the more effective surface method, with a view to meeting the requirements of thermal power-engineering based upon fuel, is one of the most important national economic tasks, and they have called upon communist party central committees, Union-republic councils of ministers, kray and oblast party committees and economic organizations to take under special monitoring the progress of construction of the Ekibastuz and Kansk-Achinsk Fuel and Power-Engineering Complexes, the South Yakutia Coal Complex and the large strip coal mines in the Kuznetsk Coal Basin and in the country's east.

The Krasnoyarskiy and Primorskiy Kray Committees of the CPSU, the Kemerovskaya, Irkutskaya, Yakutskaya and Chitinskaya Oblast Committees of the CPSU, the Pavlodarskaya Oblast Committee of the Communist Party of Kazakhstan, and rayon and primary party organizations are charged with widely promoting the work to mobilize the collectives of workers of construction and installing organizations that are engaged in the construction of strip coal mines, with raising labor productivity, with reducing the duration and labor intensiveness of construction, and with saving supply and equipment resources and capital investment.[1]

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[1] The newspaper PRAVDA of 4 October 1981.

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HANGING COMMUNICATIONS WIRES ON POWER LINE SUPPORTS URGED TO SAVE LAND

Moscow PRAVDA in Russian 4 Jan 82 p 7

[Article by V. Kalyuzhnyy, senior scientific staff worker of the All-Union Scientific-Research Institute of Electric-Power Engineering and candidate of engineering sciences: "Yes, the Land Must be Treated Economically"]

> [Text] The correspondent's report, "For All of Us" (29 September 1981), told about the experience of Bashkiria oilfield workers, who are striving to act more thriftily in regard to the land.

I cannot help but support the proposal of the Bashkiria obkom to free arable land of various types of communications, numerous poles for overhead lines of communication, and electric-power lines and to replace them with cable laid underground. The next step in solving this important problem of enlarging arable land is logical: the transmission of electricity and the organization of telephone communications on the very same lines, using the very same wires.

It must be said that up until recently this task was considered unsolvable. Because of the mutual electromagnetic effects of a communications line and an electric-power line, such lines, although they run parallel to each other, are a substantial distance apart, and this, naturally has increased the area of arable land that has been expropriated. However, this problem recently has been in process of solution. It is true that work in this area is being conducted with such insignificant forces that the end to the studies is not in sight, and the series output of combined cable for communications and wires for electric-power lines can be considered only during the next five-year plan.

Meanwhile, the question is not as complicated as can appear at first glance. And it is possible not to wait for the appearance of combined wire and cable, because, for a start, the problem can be solved this way: hang electric-power lines on supports simultaneously with communications wires. Industry is already manufacturing cable for communications that can be hung completely on the supports of power transmission lines. The high economic benefit of such "double duty" for electric-power lines provokes no doubts. But here is the trouble: the electric-power lines, as is well known, belong to the Ministry of Power and Electrification. And an attempt to get its authorization to hang operating cables that belong to the Ministry of Communications on LEP's [electric-power transmission lines] will fail, even on a shared basis for the use of such lines.

But we are talking about a matter of extraordinary importance. For the steel or reinforced-concrete supports of the LEP's are much stronger and more reliable and durable than the wooden poles on which communications lines are hung. Moreover, as is well known, they are installed not only in ordinary soils but also in swampy and rocky soils, where it is complicated, if not entirely impossible, to place telephone and telegraph wires.

Finally it would be convenient to lay LEP's and communications lines with the same brigades. All this will enable savings not only of enormous areas of arable lands, but also of hundreds and thousands of tons of ferrous and nonferrous metals, and the release of a multitude of work hands.

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FUELS

BRIEFS

AZERBAIJAN OIL-REFINERY IMPROVEMENT--The construction and successful assimilation of the capacity of a set of industrial installations for the catalytic reforming of gasoline and for the primary refining of crude oil have been completed at Azerbaijan SSR oil refineries. The creation of this complex is a new and major step on the road to a radical rebuilding and reequipping of the republic's oil-refining industry. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 3] 11409

UKRAINIAN COAL-MINING PROGRESS--Ukrainian SSR--The brigade of Hero of Socialist Labor A. Polishchuk has mined its millionth ton of coal since the start of the year, from one mine face at the Trudovskaya Underground Mine. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 3] 11409

DNESTROVSKAYA GES POWER UNIT--The second hydraulic unit of the Dnestrovskaya GES has been accepted for operation. Its capacity is 100,000 kw. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 3] 11409

KALININSKAYA AES NUCLEAR TURBINE--The Plant imeni Kirov has produced a nuclear turbine with a capacity of a million kw. It will operate at the Kalininskaya AES. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 3] 11409

SURGUT POWER-PLANT UNIT--The 13th power unit of the Surgutskaya GRES--a power station that operates on casing-head gas--has generated industrial current ahead of schedule. The total capacity now is almost 2.8 million kw. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 3] 11409

HOTHOUSE-FARM HEATING LINE--A 10-km long heating line, over which steam generated by the Razdanskaya GRES goes to a hothouse farm, has been placed under an industrial load. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian N 2, Jan 82 p 3] 11409

ROAD SLAB FOR TYUMEN'--The "Tyumen'" complex has gone into operation at the Vilnius Reinforced-Concrete Structure Plant. Departments here have been specialized in the manufacture of slab for covering roads that will be laid in West Siberia's oil-producing regions. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2 Jan 82 p 3] 11409

KAZAKHSTAN RURAL POWER LINE--A new 73-km electric power line that was laid from Kustanay's Bestausskiy Sovkhoz to the Yubileynyy Sovkhoz of neighboring Turgayskaya Oblast has been placed under a load. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 82 p 3] 11409

BURYAT COAL FIELD--Sosnovo-Ozersk, Buryatskaya ASSR--Cattle raisers at the headwaters of the Uda River have for decades been using the brown coal that crops up on the surface at the cone-shaped hill of Daban-Gorkhon. Yeravninskiy Rayon deputies became interested because of the thickness of the formation and asked geologists for help in exploring the field's reserves: would it not help to solve the fuel problem of the taiga and steppe region? "We responded," said chief of the Buryatgeologiya Production Association P. Shobogorov. "The field, which is local in scale, was studied thoroughly, and last year excavation was started by the surface method. Its reserves have proved to be considerable--33 million tons. This has enabled a program for industrial mining to be worked out in order to provide for the delivery of the coal to the farms of this and other rayons of the republic." This year high-capacity excavators will begin to operate at the field here: the quarry's pit is being extended for 2 km. In addition to meeting the municipal and household needs of neighboring rayons, Daban-Gorkhon will become a pioneering fuel base for a new coal-preparation combine. [K. Anatol'yev] [Text] [Moscow IZVESTIYA in Russian 4 Jan 82 p 2] 11409

NEW OFFSHORE PLATFORM FINISHED--The erection of a deepwater stationary platform has been finished at the new and promising offshore Oilfield imeni 28 Aprelya. It is a steel island--a young brother of the legendary Neftyanyy Kamni, the biography of whose mastery was started in the fall of 1949. Among those who penetrated that pioneering well was a young foreman's helper, Kurban Abasov. Today he is the general director of Kaspmorneftegazprom [Caspian Offshore Oil Industry Association], Hero of Socialist Labor, and a deputy of the USSR Supreme Soviet. We listen to his story: "Twenty-two oil and gas deposits have now been discovered in the Caspian Sea's waters, including such well-known ones as Neftyanyye Kamni, Bakhar, Bulla-offshore, and others. The fields are going ever farther into the open sea. Just yesterday the 100-meter goal of offshore depths seemed inaccessible for conquest, but now they are subjugated by the oilfield workers. It is at this depth that a platform has been erected at the Field imeni 28 Aprelya. The country is supplying the Caspian's oilfield workers with modern machinery and equipment. We have at our disposal the newest floating installations and drill rigs, crane ships and ships for laying underwater pipelines. All these will enable complicated engineering tasks to be solved, the Caspian to be protected from pollution, and the purity of the air basin to be maintained. With completion of the construction of deepwater platforms at the Baku plant, the recovery of oil and gas in water at depths of up to 200 meters is becoming a realistic matter. During the new five-year plan the drillers will be conducting exploration in coastal waters. [Text] [Moscow IZVESTIYA in Russian 29 Nov 81 p 3] 11409

IZHEVSKOYE-GREMIKHINSKOYE PIPELINE OPERATES--Izhevsk--A new oil pipeline has gone into operation in Udmurtia. The 60-kilometer steel artery that joins the Izhevskoye and Gremikhinskoye fields with the main trunk oil pipeline of the autonomous republic has started to operate. Although this pipeline is not as long as some others, it has an important role in the transporting of raw materials. It is accepting an increasing flow of crude oil that arrives from the two new fields. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 20 Dec 81 p 4] 11409

TYUMEN' CASING-HEAD GAS--Tyumen', 12 Dec--Surgut power workers have obtained one more reliable source of cheap fuel--the second phase of a gas treatment plant that is not far off has gone into operation. Reliability of the fuel supply for the local GRES is thereby raised, and processing of the casing-head gas that is recovered at the local oilfields, a large amount of which is still being flared off, is increased. [V. Lisin] [Text] [Moscow PRAVDA in Russian 13 Dec 81 p 6] 11409

METHANOL CONTAINER MANUFACTURE--The output of containers for hauling methanol--a liquid chemical necessary for supporting effective operation of drill rigs in the Far North environment--was mastered for the first time in the country by the collective of Kokand's Bol'shevik Plant. Five cubic meters of liquid are placed in each stainless-steel capsule. The containers are ellipsoidal in shape, which is convenient for transporting them by helicopters and airplanes. After mounting a shockwork drive in honor of the 60th anniversary of the USSR, the Kokand machinebuilders decided to ship 120 of these tanks to Tyumen' oilfield workers before the end of the year. [Text] [Tashkent PRAVDA VOSTOKA in Russian 21 Nov 81 p 1] 11409

SUMY-MADE PIPELINE COMPRESSORS--Sumy, 23 Nov--New compressors whose output in series has been arranged at the Sumy Machinebuilding Production Association imeni M. V. Frunze will insure reliable delivery of natural gas over superlong distances. The first such transfer pumping installations, which are intended for the Urengoy-Novopskov gas pipeline, have been manufactured here. The new compressor is three times as powerful as its predecessor. Its productivity is 31 million m^3 of gas per day. The unit as adapted for operation in Siberian and Northern environments. It is quickly assembled from modules with a high degree of factory preparation into a set that includes a gas engine. The installation is controlled automatically. The annual economic benefit from introducing it into the national economy is almost 2 million rubles. Before the end of the five-year plan the enterprise will manufacture about 200 such units. The West Siberia-Central Economic Region and the Urengoy-Uzhgorod gas pipelines which were named central construction projects of the five-year plan, and other important pipelines, will be equipped with them. [RATAU [Radiotelegraph Agency of the Ukraine] correspondent] [Text] Kiev RABOCHAYA GAZETA in Russian 24 Nov 81 p 2] 11409

KRASNOLENINSKIY SVOD-SHAIM PIPELINE--The first phase of the Krasnoleninskiy Svod-Shaim oil pipeline has gone into operation. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 81 p 5] 11409

MUBAREK GAS PLANT ERECTION--Erection of the third phase of the Mubarek Gas Treatment Plant in Uzbekistan has been completed. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 81 p 5] 11409

OFFSHORE OPERATIONS DURING STORM--Baku, 3 Jan--The Caspian Sea stormed fiercely in recent days of the new year. However, the work pace of the offshore oilfield workers was not reduced. On the contrary, these days were marked by labor achievements. At a specially built Neftyannyye Kamni oilfield installation, A. Makhmurdov's brigade repaired ahead of schedule well No 1957, which had been gushing with a daily flow of 15 tons of high-quality fuel. The collective supervised by A. Adzhamov achieved a still greater success. Under difficult conditions, well No 2144, which it had mastered, yielded a voluminous column of oil--25 tons per day. [L. Tairov] [Text] [Moscow PRAVDA in Russian 4 Jan 82 p 1] 11409

RECORD TURKMEN GAS RECOVERY--Gas-field workers of the All-Union Industrial Association Turkmengazprom have achieved a record recovery of gas. Each day now 180 million m^3 of gas--30 million m^3 more than at the start of the 10th Five-Year Plan--are taken from the ground. The increase was provided by putting new fields into operation and by intensifying the development of older storehouses. Automatic control systems that raise sharply the operator reliability of gas fields in remote corners of the desert have become a reliable helper to the gas-field workers. The method of obtaining gas from several formations of one well at one time and the use of bores of larger diameter have been widely disseminated. The tentative saving from the use of such technical innovations in the 15 years of the existence of the gas fields in the republic is assessed at 200 million rubles. By introducing progressive methods for organizing the work since the start of January alone, 850 million m^3 of gas above the plan have been taken from the ground. This is more than called for by the annual socialist commitment. [Turkmeninform] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 29 Dec 81 p 1] 11409

NEW PIPELINE-REPAIR EXCAVATOR--Bryansk, 28 Nov--A test model of a new two-rotor excavator for the repair of existing gas and oil pipelines has been sent to the Druzhba oil pipeline by the Bryansk Irrigation Machinery Plant. We were the first to create such a unit (its design was developed by the Leningrad Institute of VNIIzemmash [All-Union Scientific-Research Institute for Earthmoving Machinebuilding] Science and Production Association). The designers were anxious that the unit be powerful and reliable. It is based on a hydraulic undercarriage, a cutting tool, and a transporter--and hydraulic drive. An automatic regime permits the required distance from the pipe to be maintained, to prevent pipe damage. The excavator's design capacity is 425 m^3/hr. But its main advantage is something different. Previously, pipelines needing repair had to be removed outside. The new excavator permits repair to be performed without lifting the pipe. [PRAVDA stringer M. Atamanenko] [Text] [Moscow PRAVDA in Russian 29 Nov 81 p 1] 11409

AUTOMATIC GAS-PIPELINE CONTROL--Ukraine, Siberia and the Far East--The mastery of new fields and the construction and introduction into operation of five large West Siberia-Central Economic Region trunk gas pipelines and the Urengoy-Uzhgorod gas pipeline--all these are most important construction projects of the five-year plan. The collective of the Khar'kov Design-Development Technological Institute for Automated Control Systems for Industrial Processes is actively participating in the development of the West Siberian Oil and Gas Complex. An automated system for technologico-organizational control (ASU-OT) that the institute developed is being introduced now in Tyumen'transgaz [Tyumen' Gas Transport Association]. It will be used for automatic control of the operating process of transporting gas by pipeline. The annual economic benefit from introducing it will be 65 million rubles. Work is being done to create an ASU [automated control system] for the Urengoy-Uzhgorod and Urengoy-Pomary-Central Economic Region gas pipelines. The scientists are paying much attention to developing the Karat-1 complex for gas pipelines of Tyumen'transgaz and Ukhtatransgaz [Ukhta Gas Transport Association]. This complex will enable the collection of information on the gas pumping units of compressor stations. Right now the units and gas-turbine generators are equipped with Kompas-type systems. More than 40 Agat-1M type systems provide reliable, continuous delivery of gas to the country's industrial centers. The institute's collective has committed itself to developing and introducing more than 300 ASU's of various levels into the industry. [V. Puzikov] [Text] [Kiev PRAVDA UKRAINY in Russian 3 Jan 82 p 3] 11409

GAS PIPELINE PARTS PLANT--Kamyshin, Volgogradskaya Oblast, 3 Jan--A state commission has accepted the first phase of an experimental plant here for the repair and manufacture of spare parts for gas pumping equipment. This facility in Volgogradskaya Oblast can truly be called a construction project of friendship. A construction organization from the city of Brno (Czechoslovak Socialist Republic) is erecting the plant and a complex of housing buildings. The collaboration was born back during erection of the Antipov Compressor Station of the Soyuz gas pipeline. The new plant will enable precision servicing of the gas pipeline to be organized. [PRAVDA stringer V. Kornev][[Text] [Moscow PRAVDA in Russian 4 Jan 82 p 1] 11409

KHAR'KOV GAS PRODUCTION HIGH--Khar'kovskaya Oblast--Gas-field workers of Khar'kovskaya Oblast have begun to turn out the second billion cubic meters of the blue fuel above the plan. These high indicators were achieved by intensifying the recovery of raw material and the introduction of new technology, integrated mechanization and automation of production work, and progressive forms for organizing the work. The socialist commitments adopted at the start of the year for above-plan recovery of gas have been fulfilled successfully. Heading the competition are Shebelino Gas Field Administration operator and delegate to the 26th Ukrainian Communist Party Congress N. K. Aksenov, Krestishchensk Current-Operations Service operators V. M. Lagatin and F. A. Kuznets, and Yefremov Current-Operations Service operator A. I. Pavlenko, who are working on their 1982 accounts. In all, 1,057 gas-recovery workers are working on the calendar of the second year of the 11th Five-Year Plan. Having supported the initiative of Tyumenskaya Oblast worker collectives to carry out ahead of schedule the five-year plan tasks for recovering oil and gas, Khar'kovskaya Oblast gas-field workers resolved to give the national economy 250 million m^3 more gas above the plan before the end of the year. [N. Guk] [Text] [Kiev PRAVDA UKRAINY in Russian 25 Nov 81 p 2] 11409

URENGOY-PETROVSK PIPELINE COMPLETED--Tyumen'--The laying of the Urengoy-Petrovsk gas pipeline was completed yesterday, 4 months ahead of schedule. Almost a third of the pipeline--852 km--lies across the tundra, swamp or taiga of the Tyumen' North, where Glavsibtruboprovodstroy [Main Administration for the Construction of Pipelines in Siberia] worked. More than 30 billion m^3 of the "blue" fuel per year will be sent over the new gas artery to the country's Central Economic Region. The new, outstanding victory was a concrete answer of Tyumen' workers to the decisions of the November 1981 CPSU Central Committee Plenum, at which erection of the West Siberia-Central Economic Region gas pipeline was named one of the five-year plan's central construction projects. Severtruboprovodstroy [Trust for the Construction of Pipelines in Northern Regions], which was quartered at Nadym, laid 400 km of the line. At the end of November the trust's best collectives--the welding and erecting brigade of USSR State Prize winner B. Diduk and the insulation-applying column of V. Madenov--appealed to all Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] subunits with a call to complete construction of the Urengoy-Petrovsk gas pipeline ahead of time. All the collectives picked up the appeal. Hundreds of kilometers of tundra, taiga and swamp, thousands of pipes, and tens of thousands of welded seams. In swampy mud, in piercing winds, through smarting cold....But they did not lag. They kept their word. And now here is the last joint, the "golden" joint, which, as they say here, crowns the victory. The brigade under B. Diduk is welding it. It is an unusual brigade, in which are assembled representatives of most of the subunits of the main administration and its subcontractors. The best of the best--the driver and the operator of the pipelayer, the excavator operator and the dining-room cook, the insulation wrapper and the supervisor of the operational flow group. This detachment could include a helicopter pilot, a surveyor, a port worker or a railroader. They also make their contribution to the gigantic construction project. Yesterday was a holiday. The work will continue tomorrow. This time on the Urengoy-Uzhgorod gas pipeline. [V. Ivanov] [Text] [Moscow TRUD in Russian 27 Dec 81 p 1] 11409

GAS FIELD PLAN COMPLETED--The country's gas-field workers are greeting the start of the second phase of the five-year plan with labor gifts. They completed the state plan for recovering valuable raw material and for other technical and economic indicators ahead of time, on 25 December. The country's economy has been sent 458 billion m^3 of gas. Growth will be 30 billion m^3 during the first year of the five-plan. [Text] [Moscow TRUD in Russian 27 Dec 81 p 1] 11409

KAMA OILFIELD OPERATIONS--Tatarskaya ASSR--The collective of the Prikamneft' Oil and Gas Recovery Administration of the Tatneft' Association has been working successfully during the first year of the 11th Five-Year Plan. It has to its credit 12,500 tons of high-quality raw material above the plan since the start of the year. These Kama oilfield workers have special working conditions. Because of construction of the Nizhnekamskaya GES and the creation of an artificial sea, 170 wells in 3 fields have wound up in a flooded zone. A system of hydraulic-engineering structures, as well as 24 artificial islands on which high-powered pumps take the black gold from deep formations in the ground, has been built to protect the wells. [TASS] [Text] [Kiev RABOCHAYA GAZETA in Russian 1 Dec 81 p 1] 11409

TALALAYEVKA-GNEDINTSY GAS PIPELINE--Chernigov--The Talalayevka-Gnedintsy pipeline has gone into operation. Casing-head gas from three oil and gas fields that formerly "heated the air" will be transported over it. The gas requirements for 3 days of a city of 100,000 people escaped up the pipe each month. It will now be put to use. Thanks to the new gas artery, bottled gas for districts not equipped for piped gas will be produced from heavy butane-propane fractions at a gas treatment plant. [Zh. Tkachenko] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 30 Oct 81 p 2] 11409

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